

**REPORT OF THE WORKSHOP ON
BASIC PRINCIPLES FOR THE PREPARATION
AND REVIEW OF TEXTBOOKS**

Held at Baroda

From 11th to 14th August, 1969

Under the joint auspices of

- the Directorate of Education, Gujarat State
- the National Board of School Textbooks, New Delhi
- the National Council of Educational Research and Training
- the Centre of Advanced Study in Education
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FOREWORD

Soon after the Government of Gujarat decided to nationalize school textbooks, it initiated immediate action to make this programme successful. The government took quick action, not only on administrative aspect but also on the academic matters that are very important to improve the quality of textbooks. The State Directorate of Education contacted the National Council of Educational Research and Training and desired to undertake a programme of developing basic principles and criteria for the preparations and review of textbooks for Class V to VII with the help of present and prospective writers and other schools of the State. The newly created Department of Textbooks of the Council immediately accepted the invitation and organised the programme.

It is very heartening to note that the response proved to be very encouraging inspite of the short notice to the participants.

Out of 50 invitees, as many as 48 attended the programme for four days. They discussed major aspects of textbooks programme, a frame work for the preparation of textbooks, and variety of problems related to the subject. They also worked in groups and drafted out basic principles of preparing textbooks in Languages, Social Studies, Science and Mathematics for classes V to VII. It is hoped that the basic thinking and material produced during the workshop would prove helpful to the writers and reviewers of textbooks, and ultimately contribute towards the improvement of the quality of textbooks. It is common knowledge that the textbook is by far the most widely used instructional material. Hence,

it is essential that a concerted effort ~~should~~ be made step by step to improve preparation, production, distribution, use and revision procedures of school textbooks.

We are grateful to Hon'ble Minister for Education of Gujarat State, Shri Gordhandas Chokhawala for visiting the workshop and encouraging us in our combined venture of improving the quality of textbooks. We are also grateful to Shri P.R. Chauhan, Director of Education, Gujarat for involving the National Council of Educational Research and Training in this programme soon after the state decided to start the process of nationalizing textbooks. Shri W.P. Abhyankar, Dy. Director of Education followed up this proposal and gave a concrete shape to the programme. We are very thankful to him also.

Dr. C.S. Patel, Vice-Chancellor of M.S. University, Baroda inaugurated the workshop. His appreciation of this work proved a great source of inspiration to all concerned. We are extremely grateful to him for having spared his valuable time for us.

The workshop would not have materialized in such a short time and so efficiently but for the indefatigable efforts of Dr. M.B. Buch, Head of the Centre of Advanced Studies in Education, Faculty of Education and Psychology, M.S. University, Baroda. Both organizationally and academically, Dr. Buch's help proved to be invaluable for which we are extremely thankful to him. Dr. D.M. Desai, Dean of the Faculty of Education and Psychology, M.S. University, the staff members of the CASE and other members of

of the Faculty contributed a great deal in making the programme a success. Their valuable contribution in all aspects of the workshop is gratefully acknowledged.

It is earnestly hoped that the new movement of textbook reform which has been started with this first field programme of the Department of Textbooks in collaboration with the State of Gujarat will gain momentum very quickly to improve the most widely used instructional aid in our schools.

Baroda
~~April~~, 1969
August,

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Chapter I

Major Aspects of Textbook Programme

Textbooks play a very important role in the education of children. To many of them this is the only instructional material available for their reference and study. Thousands of textbooks in different subjects at different levels are being written every year in our country. But not enough thought is given to their preparation so as to draw the maximum benefit out of them. This is evidenced from the fact that there is an acute dearth of literature on the process of preparing the textbooks. As such, there is a great need for giving more thought to this important aspect of child education and also to produce suitable literature for the guidance of textbook writers and others.

This leads to the question of knowing what a text book is and in what respects does it differ from other books. The answer to this may throw some light on the process of preparation of textbooks.

What is a textbook

Textbook as will be appreciated is essentially addressed to students and is also used by teachers as a vital instructional material. Textbook is used as the basis of evaluation and graduation of pupils. It should, therefore, interpret and delineate the syllabus and should be so organized as to help the realisation of instructional objectives laid down by the curriculum. It should not only be relevant to the syllabus but it should also reflect the instructional objectives as well. In view of this the textbook writer does not have that freedom the authors of other books enjoy. He has necessarily to use only the contr-

material and guide the learning process. He has to present only that knowledge which is prescribed by the syllabus and build in its presentation enough opportunities for pupils for consolidation, revision and reinforcement of what they have learnt through the various processes of individual or collective learning as also enough opportunities for evaluation. Textbook writers have to plan and design for the development of these techniques whereas the authors of other books are not under this obligation. They are free to select and present content in the way they think best.

Textbooks thus essentially are addressed to pupils and present knowledge under controlled conditions of content and techniques. They have to interpret and delineate the syllabus for the teacher as well. The other books are more or less free in all matters and they essentially are addressed to any reader and present knowledge irrespective of techniques.

This demarcation between the textbook and other books may be further clarified if we examine the role of textbooks in the process of education of children.

Role of Textbooks:

Education of "a learner" is a set of interactions between the learner on the one hand and the other learners, the teacher, the instructional material, the home and the community on the other. These may be represented by the following interactional equation of the process of education.

$$EL_1 + L_1 \rightleftharpoons L_n^2 + L_1 \rightleftharpoons T_m + L_1 \rightleftharpoons M_p + L_1 \rightleftharpoons H_e + L_1 \rightleftharpoons C_d.$$

The first three components of this equation viz. the interactions between the learner, (L_1) and the other learners (L_n), the learner and the teacher (T_m), and the learner and the instructional material (M_p) constitute Formal Education while the last two components viz the interactions between the learner and the home (H_e) and that between the learner and the Community (C_d) constitute Informal Education. The efficiency and success of education will depend upon the healthy integration of all the above component interactions involved in the process. The better planning for their integration therefore will increase the chances of making education more effective.

For this purpose in addition to the textbook the teacher uses a variety of instructional aids such as teachers hand books, source books, teaching units audio-visual aids and others while the student also uses such aids as supplementary reading material, workbooks etc to supplement the textbook. In this process, however, the textbook plays the master role. Other aids in many cases are firstly not available and if available their role is mainly subordinate and supplementary.

Textbooks thus enjoy a unique position. They are expected to be available to every teacher and every learner. They therefore have impact on every component interaction indicated in the above interactional equation. They are the starting point of all educational endeavour, both for the teacher and the learners. They function as a medium for all the variables of educative process and affect both formal and informal education through all the processes of individual and collective learning. Perhaps

there is no other single tool as the textbook which influence all interactions in the process of education. It is the textbooks that motivates and sustains pre-lesson learning and post-lesson learning involving periodical learning, relearning and reinforcement in addition to the formal class-learning.

Textbooks therefore will have to be so designed as to initiate and encourage these techniques which will finally help in achieving the goal^{of} education.

For this purpose a considerable thought will have to be given to the planning and execution of the different aspects of textbook programme if the textbooks are to serve the above mentioned purposes. We will now turn our attention to locate some significant aspects of the process of textbook production and examine their role.

Some significant Aspects of Textbook Programmes:

To enable the textbooks to serve their above mentioned functions effectively great care and thought will have to be put in the following aspects of textbook production:

1. Preparation
2. Production
3. Distribution
4. Use
5. Revision.

1. Preparation - Special care has to be taken to plan the text books in order to interpret the objectives and content laid down by the syllabus. The plan then will have to be

translated through properly writing and editing process. Suitable illustrations may have to be provided at the right place. They will have to be carefully chosen so as to create interest and variety in presentation in addition to their explanatory role. Well chosen exercises will have to be provided for review and evaluation.

2. Production - A good MSE also will fail if it is not well produced. A textbook when ready, expert advice will have to be obtained to decide about its designing and printing to make it effective. Pricing also will require careful study. A trial edition may be brought out before final printing. The book then may be tried out. Expert opinion may also be obtained through evaluators or reviewers. In the light of the try-out experience and opinions given by experts modifications may be carried out and the book may be finally printed. This process will give opportunity to remove drawbacks which might have remained unnoticed by the author. This will thus build in validity for the book and can be confidently placed in the hands of pupils.

3. Distribution: The next important aspect in the textbook programme will be to set up an effective machinery for the distribution. If the distribution is not properly organised the books will remain idle and will not be sold and there will be great financial loss. But more than that if pupils do not get them, the process of education will be severely handicapped. It is very imperative therefore that a machinery is set up to see that every pupil in the remotest part, rich or poor alike, gets a textbook at the right time. To possess a textbook is almost a right of every child and the state must respond to it.

4. Use: As observed earlier the text book is to be used by all the pupils as also by the teacher. It can be effectively used if a supplementary programme is developed as a help in the process. Textbook have its limitations of pages and price. If these textbooks are supplemented with teachers' hand book for the use of teachers and workbooks for pupils, the textbooks will serve the purpose better, and both the teachers and pupils will enjoy using them. Textbooks therefore must necessarily be accompanied by teachers handbooks and workbooks for pupils.

These teachers handbooks and pupils work-books should be used as study material in the training colleges. That will acquaint our future teachers with the right use of such material and also the efficacy of the material will be tried out.

In addition to the teachers handbooks further help can be given to teachers by preparing teaching units on the text books. These teaching units should give detailed guidance both in respect of content and methodology.

5. Revision: Textbooks once prepared should not be considered as final and rigidly set. There is always scope for change, scope for improvement. But this cannot be effectively done unless the textbook programme is supported by adequate research. Research studies will have to be designed and conducted on various problems related to different aspects of textbook such as suitability of content or methodology, accuracy of information supplied or durability of the book etc. The research findings should be

used to revise the book. Thus the research leading to revision which in its turn would lead to further research may be made an integral part of the programme. This will make textbook production a living and dynamic process.

These are some important aspects of textbook programme. Each of them has its place and role to play. If any one of them is not adequately taken care of, the process will fail and will not serve the purpose. For this great task of national importance talents from different sources Governmental or private, individual or groupwise will have to be utilised.

In the next chapter attention is devoted only to be the "preparation" of textbooks as this is meant for textbook authors and reviewers. Other aspects are not discussed in these pages.

Chapter II

A Frame-work for Textbook Preparation

Textbook writers are very much concerned with the question of preparation of good textbooks, so that they will serve their functions well. Textbook has a certain place in the curriculum and certain functions to be discharged in the process of education. It has to interpret and delineate the instructional objectives and the syllabus, it has to help the teacher and the pupils alike. All this can be better understood and done if the implications of these various related elements to textbook preparation are fully understood by the textbook ~~preparation are fully understood by the textbook writers~~. This enlightenment will help him to better plan and prepare the textbooks. The following are some such considerations:

1. Textbook and the total curriculum plan : while developing a curriculum plan the framers have visualised certain relationships between various elements of the curriculum. The proper understanding of these relationships is necessary before an author can fully translate it into the textbook. The author would do well to study the total curriculum plan before he plans his book. He should then make an attempt to fit his book according to the expectations of the plan.
2. Textbook and the syllabus of the subject: It is very necessary that the author studies the syllabus in the subject and analyses it in respect of the concepts,

principles etc. involved in each topic laid down by the syllabus. He may then organise the syllabus into suitable units and sub-units. In each unit only the related topics should be covered. This will help in selecting activities and exercises and also in deciding upon the chapters- Generally a chapter should be devoted to one unit. If necessary however a unit may extend over more than one chapter. It would then be necessary to decide in advance the weightage to be given to each unit and the material then will have to be selected and presented accordingly.

The sequence in which units and sub-units are to be presented will also need some consideration. Sometimes some information is a pre-requisite for understanding some other information. In such case the sequence is very important. Some ideas which are easy to follow should precede and more difficult ones may be given later.

The nature of exercises for various purposes and weightage to be given to them should also deserve some considerations. Illustrations and their presentation may also be decided.

3. Textbook and the Instructional Objectives: The study of instructional objectives is a must. It gives direction in respect of the method of presentation and selection of exercises and illustrations. In fact the objectives give life to the content which is otherwise

inert. The earlier the authors appreciate this the better it is for the quality of textbooks produced.

4. Textbook and the Nature of the Subject: Every subject has its own personality and has a place in the curriculum. The author should study this and treat the subject in the light of this. Physics for example is a subject where deduction of generalizations plays an important role. It may not be so important in language. This understanding will be useful while presenting the matter in the respective subject.
5. Textbook and the Learner: Textbooks are essentially addressed to the learners. The knowledge about the learner will therefore be very necessary in order to make the book effective. His mental background, his previous status in the subject, his likes and dislikes and interests at that age will all be important. The knowledge about this will help the author to select activities suited to his interest and present material in a sequence understandable to him. The whole book is for the learner and it should be reflected throughout. Suitable workbooks may be provided to them to meet the individual needs.
6. Textbook and the Teacher: The teacher has to use the book as the instructional material. The author has to know the teachers and their capabilities. It would

be very necessary to help the teachers in doing their job by giving suggestions in methodology to be followed. It cannot adequately be done in textbook as it is meant for pupils as well. But it should be visible throughout the pages of the textbook through presentation.

7. Textbook and other Instructional material: All teachers are not equally competent to handle the subject equally well. Some of the teachers will certainly require help and even the work of the best teachers will be facilitated if some help is provided. For this purpose teachers guides or handbooks giving detailed ~~giving-detailed~~ hints to teaching, additional information material and more activities and exercises may be prepared and made available to each teacher. This material may be used as study material in the training colleges for preservice training programmes.

Teaching units developed on a textbook if provided to all the teachers will serve a similar purpose.

8. Textbook of a given subject and Textbooks in other subjects of the same grade: The knowledge about the scope of the textbooks in other subjects and material presented therein will enable the author to avoid duplication or overlap on the one hand and on the other reinforce some ideas through more subjects than one where found useful.

9. Textbook of given subject of a given grade and Text books of the same subject in other grades:

This information is very necessary to present matter in a sequential manner in addition to maintaining continuity and articulation with the past and the future. This will avoid duplication. During presentation wherever necessary author can draw upon the material from the earlier classes and provide basic material for preparation for the following classes:

These relationships are very vital and the author has to carefully study them and apply them in all aspects of his work. The text book will then not be an isolated entity but a part of a living organism playing the role assigned to it. The outcomes of the above considerations will have to be specifically applied to the following elements of textbook preparation programme:

Planning: All the above considerations should be kept in mind while planning the textbook. If it is adequately done at this stage all other stages may work smoothly and the textbook would take a desired shape.

Content: The selection of content matter and its presentation should be done such as to make it interesting and intelligible. The general tenets of presentation viz. known to unknown

simple to complex etc may also be kept in mind. The organization should help the pupils and not hinder them. The presentation should consider their achievement level and enough challenge should be provided suited to that level.

Illustrations: Illustrations have various functions to serve such as giving information, motivating learning, developing interest and creating variety. The author should carefully see that the most effective use of all types of illustrations such as sketches, photographs, charts or diagrams is most economically made at the right place. He should see that they are appropriate and practicable. It should also be seen that proper colour scheme is used and the reproduction is accurate.

Exercises and activities: These should be objective based and should offer enough challenge to the pupils. According to the need they may be given during the lesson, ~~at the end of the lesson~~, at the end of the lesson or at the end of the book. They should have variety and serve the purposes of pre-lesson learning, post lesson learning etc.

Preliminaries: The author should take advantage of the preliminaries such as writing a foreword where he can speak to the teachers and give them valuable information or suggestions which he cannot do in the body of the text-book.

Other Aspects: The author may look to the other aspects such providing a glossary, or tables of some mathematical data or physical constants wherever necessary. This may increase the value and the usefulness of the book.

Total Designing and Get-up: The author should be watchful that his book is printed in the right type and right quality and size of the paper is used. The designing and cover is of no less importance. A good book will be better if it is presented properly. The author should take requisite help and guidance from experts in this field and see that this side is not neglected.

The author may like to study the various relationships indicated above. The information so gained will be very valuable. He may then take help from various experts in the respective areas and see to it that the book becomes really a piece of art and a piece of functional utility.

PLANNING A TEXTBOOK

K.G.Rastogi

Out of the five basic steps of a widely visualised textbooks preparation programme, viz. preparation, production, distribution, use and review of textbooks, planning a textbook is concerned only with the first two. Again, planning the preparation of a textbook is concerned with both of its aspects - external and internal, while planning the production is concerned with the designing of a textbook keeping in view all its physical aspects and the actual printing. This presentation is restricted to the preparation of a textbook as it is addressed to the writers of the textbooks, but some points specially concerned with the physical aspects proscribed by the prescribing agency and to be implemented at the production stage will also be taken into account as they give hints to a textbook writer in planning the preparation of a textbook, which is discussed under the above mentioned two aspects of a textbook, viz. external and internal.

External Aspect of a Textbook:

The prescribing agency should prescribe the syllabus giving information about the items like those given below:

1. Instructional objectives of the subject.
2. Broad areas of content in the subject.
3. Volume of the textbook.
4. Distribution of space into text material, exercises, illustrations, glossary, tables, preface, instructions to teachers and students etc.
5. Size of the textbook.
6. Type size for printing.

Internal Aspect of a Textbook:

While planning the internal aspect of a textbook, the textbook writer should take into consideration the following factors:

1. Instructional objectives of the subject
2. Text material
3. Exercises
4. Illustrations
5. Preliminaries of a textbook including the preface and instructions to teachers and students, if any.
6. Other material, e.g. glossary of words, basic concepts, necessary tables and formulae etc.

1. & 2. Instructional Objectives and Text Materials: The writer should give weightages to different instructional objectives of the subject and correspondingly to different content areas. There may be subjects, like languages in which the syllabus does not mention the content areas. In such case the content areas also are to be decided by the textbook writer, of course, keeping in view the instructional objectives of the subject. However, the weightages to different content areas and the specific topics under them should be given in view of their potentiality of achieving the instructional objectives of the subject. This relationship between the instructional objectives and the content is the must.

The second step to be followed by a textbook writer is to prepare a synopsis of the textbook. This synopsis should give a definite idea of the placement of the content in the textbook in terms of the sequence, number of pages etc.

3. Exercises:

In planning the exercises in a textbook the textbook writer has to take decisions about the space to be allotted to them and also their placement. Of course, the space will depend upon the purposes which may be pre-learning, post-learning, enforcement, periodical revision, diagnosis and self evaluation etc. Keeping in view the purposes and the number of exercises in a textbook, their placement also is to be planned as to what exercises may be given before the lesson, just after the lesson or at the end of the book.

4. Illustrations:

Illustrations are also to be planned according to the need of communicating the content to the student and also motivational purpose. 'What', 'how-many' and 'where' are the three questions that are to be replied by the textbook writer while planning the illustrations in a textbook. Of course, illustrations are supplementary and subordinate to content, but sometimes the placement of a good illustration may suggest an attractive and motivating presentation.

4. Preliminaries of a textbook:

The preface, the instructions to teachers and the instructions to students etc. should also be planned in terms of 'what' and 'where'. Of course, the preface is in the beginning of a textbook but the instructions may be either just in the beginning of the book or in the midst wherever they are needed to give

the hints to the students to handle the content. It is also possible to give the instructions according to different categories or the nature of the content. Similarly, while deciding what about the instructions to teachers a textbooks writer has to take into consideration the instructions to be given in the teachers handbook also. But all these things are to be planned beforehand.

6. Other material

A textbook writer is also to plan about other necessary material to be included in the textbook. That material may be some of the reference material e.g. glossary of words and some necessary tables and formulae required to be consulted by the students. This material also needs to be planned in terms of what and how.

SELECTION AND PRESENTATION OF THE CONTENT IN A TEXTBOOK

Selection of the Content for a textbook is like choosing a situation in response to which learning may take place among pupils. Its presentation is likewise, similar to its actual use for teaching with appropriate preparation and precaution. The textbook being very much a 'teacher in print' it represents a prescriptively designed pack of learning situations intended to be administered through the medium of the printed page. This will mean that writing of the textbook involves selecting, contriving or developing learning situations with uncanny anticipation in the light of the goals set. This is by no means an easy task.

The syllabus, among other things, attempts to delineate instructional goals and mentions principal topics of content. These may be taken as basic frame-work or first order selection of the content. The objectives and the outline content together provide guidelines for further exploration of details, which is a major exercise to be normally gone through by the author himself.

The nature of this work varies from subject to subject. In this context the three ^{broad} types of such work may be identified as below:

a) Selection of content details for a particular topic from a horde of them, enough to compose the material suited to requirement of the grade textbook.

b) Selection of already composed materials as media for presenting syllabus requirements of the grade.

c) Selection of information from different fields to serve as points for composing new materials for the grade's textbook.

So far as the major share of the content selection in a subject at the school stage is concerned, Social Studies may represent the first case, languages the second and practice exercises in mathematics the third.

Some Principles of Selection of the Content

This only shows as to how varied are the problems of selecting the content. Nevertheless, the following principles may be kept in view while selecting content whatever the subjectified:

a) Relevance: It refers to both objectives of the course and the nature of the content. The instructional objectives, major ideas or topics of a given course of study should serve as reference points. In cases where syllabus is not so developed, this aspect of work may also have to undertaken of the textbook writer to start with.

b) Background of the Learner: The content selected should be in consonance with needs, interests and experiences of the learner. It also includes the consideration of previous learning of pupils.

c) Accuracy: It includes both upto-datedness and authenticity. In many cases accuracy has a range. This range should be reflected in the treatment. Some information though accurate may have to be appropriately avoided due to certain practical

considerations.

d) Availability of Space: A discerning restraint is needed when selection is to be made out of plentiful material to avoid an overdose of details, the specialist's penchant.

e) Fullness: Economy of space should not lead to incomplete, cryptic treatment of specific points of content. The information should be adequate to avoid any misconception about that point. Elucidation should lead to a clear understanding and be satisfying to the reader.

f) Use: It pertains to the intended use of the material. It will differ according as it is intended to be used as pre-lesson material or base material for a lesson, or post-lesson material.

g) Conformity with National and International Ideals: This is an important test of the appropriateness of the content. Nothing which runs counter to the accepted national or international ideals should find a place in the textbook.

h) Providing for Individual Differences: While selecting the material the author must keep in view individual differences in academic growth. There may be some material which all pupils should know while there may be other which may be challenging to them. The textbook should not cater to the needs of one single level.

i) In addition above there are a number of pedagogical psychological and administrative considerations to be minded such as the child's interests, teacher's competence, school resources etc.

Procedural Considerations:

The selection of content requires two principal operations. (1) analysis of the syllabus and (2) exploration for appropriate content by way of lead up, explanatory or augmenting material. The analysis of the syllabus provides such information as

- i) major ideas or understandings
- ii) concepts, and
- iii) basic facts.

The search for the second category of materials takes one to various sources from where could be culled such things as

- i) elucidatory facts
- ii) current information
- iii) data
- iv) extracts; etc.

The selection of content is spread over a large variety information and sources for them, such as reference books, source books, original sources, records, journals and abstracts. Libraries of textual materials is a much needed facility.

Presentation of the Content

Selection of content provides raw material. The quality of the product, here the textbook, materially depends upon how well this material is utilized and patterned into proper shape. It involves two major operations (1) developing the organizational plan and (ii) then giving the plan a concrete form i.e. the manuscript of the textbook.

Organizational Plan

The organizational plan should evince the following characteristics:-

i) Unity: Unity is a telescoping concept, chapters leading to sections and sections to the book as whole. One textbook represents one unified whole in which parts acquire meaning in the context of the whole.

ii) Coherence: Various items, units or any other variety of constituents of the textbook should cling and click together. This quality of relationship provides for ample transfer of learning within the subject-matter. It is a problem of integration, both horizontal and vertical.

iii) Balance: The textbook is a sustained composition. Size and emphases of various components should reflect the spirit of the subject and requirements of the syllabus in proper proportion.

iv) Nature of the Discipline: Each subject has its own methods and logic. This should be reflected in the organization of the content. There are two approaches to achieve it - formal or systematic and informal or incidental. The former suits better the higher classes while latter is more appropriate for the lower stage.

v) Appropriateness of Content Blocks: The content should be broken into units of proper size and homogeneity. The scope of each unit should be determined to avoid duplication and fruitless replication.

vi) Articulation: The content organization of a particular grade should be so effected as to provide proper continuity of learning from grade to grade, building it upon what has already been gone into and providing a sound base for that which is follow. As far as possible this may also be reflected in the arrangement of units written a. textbook.

vii) Gradation: As already pointed out, subject matter should be so arranged as to provide a well articulated continuity. In addition there is a need for proper gradation of material. In subjects other than languages, this gradation is primarily based on the logical order inherent in the subject-matter. In case of languages, the linguistic material among other things, may have to be graded from the point of view of difficulty frequency and complexity.

Drafting Manuscript:

The execution of the content organizational plan will be based on the considerations cited above. In addition to them, there are many more which are peculiar to the actual presentation of the content, better say the composition of the text itself. They include a variety of pedagogical considerations, including the demands of the psychology of learning. Some of them are suggested below:

1. Facility of Communication: The textbook brings the author into contact with pupils more or less as a teacher. The quality of communication will go a long way to determine the quality of learning. In this regard the textbook author should pay particular

need to such matter as

- a) Clarity of expression,
- b) Suitability of the language for the grade level,
- c) Appropriateness of style,
- d) Use of illustrations,
- e) Key questions,
- f) Captions,
- g) Judicious variety in the forms of presentation e.g. narration, dialogue, description etc.

2. Attractiveness: A large variety of measures can be resorted to make the textbook appetising. For example style, variety of forms and illustrations may contribute a lot towards it.

3) Provision of Cross Preferences: This help the reader in more than one way, such as revision, relatedness and continuity.

4) Reiteration: Repetition. reiteration or replication whatever it may called, is very desirable consideration for fixing learning through the use of the learnt item in a variety of situations. This reoccurrence may be planned spirally.

5) Whole to Part and other Pedagogical Principles: This consideration are as important for a textbook as they are for teaching. For example in the textbook of sciences and social sciences, the use of sectional introduction in the beginning exposes the learner to a 'holistic ^{view} / ' of the content field. This is then followed up by chapterwise or sub-sectionwise treatment. Similarly, such other principles as near to far, easy to complex, familiar to unfamiliar etc. may be taken care of.

ILLUSTRATIONS IN TEXT-BOOK

INTRODUCTION

It is common knowledge that the man used pictures to express ideas before he used letter. Everyone understands the language of pictures and the human mind grasps them quickly. Pictures appeal to all-old and young, literate as well as illiterate.

Illustrated text-books play a very important role in the present-day education. They are essential tools which are indispensable to students and teachers. Educationists in India have been aware that the problems of text-books need our immediate attention. Good textbooks have been accepted as effective mass media through out the world. In the field of communication much research has been done in the study of motion picture in its various phases. However, very little has been done in the field of printed material. It needs research in (1)Content, (2)Visuals, (3)Formate, and (4)Methods of production. To receive a message to our mind through the medium of pictures is a visual thrill.

Importance of illustrations

At every stage of the curriculum and in connection with every kind of subject matter, from imaginative fiction to quantitative fact, illustrations are extensively used. For instance they provide explicit explanations of a variety of relationships in different fields of knowledge. They clarify complex operations of machines as well as living organism. Any modern textbook is a galaxy of illustrations that helps the learner who has an inadequate command over the verbal media in

underlying the content more clearly. There is no substitute other than pictures to make up for this inadequacy on the part of the learner, especially at the initial stage of learning.

The experiences given by illustrations may not complete. For example, sound and smell are missing in a visual illustration. ^{but} even these are potent enough to establish effective communication of a wide range of ideas and experiences. What they purport to do is to supply immediacy of understanding not easily and quickly achievable by words alone.

II Purposes.

The following are the main purposes of the illustrations in the textbooks:

1. To provide a visual image of an idea pertaining to the text.
2. To develop the imagination of the reader by giving much more information regarding the theme.
3. To present a clear and vivid picture of the unfamiliar objects or figures which are abstract.
4. To help the teacher and the learner in different teaching-learning situations.
5. To reduce the eye-fatigue of the reader by providing attractive and interesting pictures in the textbooks.

III. What are illustrations?

According to the definition given in New International Dictionary written by Mr. N. Webster, "the illustration is a picture very much different from picture in real

sense. It may be a diagram or drawing that helps the learner ^{in learning} things, more effectively and vividly.

"A picture", according to him "is a representation of natural or imaginary object of human form as by a painting in colour or a sketch." So there lies a great difference between a painting and an illustration.

An illustration is a good combination of words, captions, drawing, etc. The pictures in the textbooks are referred to as illustrations which communicate facts, ideas and concepts clearly. Illustration is a very wide term that includes a variety of visual forms (1) Pictures (2) Photographs, (3) Drawings and Sketches, (4) Posters, (5) Graphs, (6) Diagrams, (7) Charts, (8) Maps, (9) Cartoons and (10) Comics etc. The term "illustration" carries with it the sense of a vivid and clear presentation with boldness. Illustrations are well thought out, scientifically planned and convey much more real and concrete impression than do the words. Sometimes illustrations as a communication media, can overcome the language barrier, hence they are needed badly in our textbooks. The word illustration is sometimes used by teachers in the sense of verbal examples to describe clearly and vividly a notion or a concept or an idea. But when we talk of textbook illustrations we simply mean pictures used to supplement the text materials.

IV Categories of illustrations:

It is not essential for the book designer to prepare illustrations for the textbook himself. He should know the types of pictures to be used in textbooks. The pictures used as illustrations fall into three major groups based on the primary purposes served. They are:

1. Demonstrative or Expository
2. Documentary
3. Artistic

1. Demonstrative illustration have a function approaching that of chart and diagrams; to explain the structures or operation of something in nature or in culture, e.g. the the experimental apparatus in Physics, the different processes of making cement, the life cycle of a mosquito or the diagram of night and day are obvious examples of the demonstrative illustrations.

2. Documentary illustrations. These illustrations denote typical phases of human life or of nature as they actually stand for. There should be no addition, subtraction rearrangement and editing. They help us in understanding the social-economic behaviour. The pictures taken by the chemical action of light through a still or movie camera fall under this category. The photographs showing the life of Eskimos, the flight of astronauts, the functional growth of a plant, the culture of different people - are glaring examples of documentary type of illustrations.

3. Artistic illustrations: They represent the aesthetic side of man. In these pictures the artist is expressing his own feelings or ideas about something using all sorts of lines, colours, shapes and compositions. Most of the posters, drawings, murals, paintings, cartoons & comics are primarily artistic, hence come under this group.

7. Media of Illustration

Now let us examine the various graphic materials we use as illustrations in the textbooks. These instructional materials are nearer to reality perceptually than verbal symbols. Underneath is a brief introductory analysis of each.

1. Photograph:- It is a picture taken by means of chemical action of light on sensitive film on the base of glass, paper or metal.

2. Painting or Drawing:- It is an arrangement of shapes that are made of line, form and mass. It may also be called as visual symbol of thought.

3. Chart:- It is a systematic arrangement of facts in pictorial form which summaries, compares or contrasts in explaining the subject-matter. It is mainly of the following five types:-

- (a) Time chart or tabular chart. (b) Tree chart
- (c) Flow chart (d) Comparison and contrast chart, and
- (e) pictorial chart.

4. Graph:- It is a diagram for presenting data for making comparison and depicting relationships. The following

are the main types of graphs:

1. Solid graph
2. Bar graph
3. Line graph
4. Pie graph
5. Diagram: It is a drawing made to illustrate a State -ment or facilitate a demonstration.
6. Map: An accurate representation in a diagrammatic form of the surface of the earth or some part of it drawn to a scale.
7. Poster: It is a picture designed for display to convey a message or idea and to create a strong lasting impression.
8. Sketch: It is an unfinished drawing or painting often used for experiment without many details and for conveying a general idea of something.
9. Cartoon: A symbolic line sketch usually a drawing intended to convey a message or point of view about things, events and situations.
10. Comic: It is a form of cartooning in which the same cast of characters enacts a story in sequence of closely related drawings designed to entertain.
11. Isotype Symbols: The visuals are based on standardised symbolic elements representing men, machine, trees, animals, common objects, and other things. In this style everything has to be reduced to its bones, It is based on a highly specialised technique and needs a specially skilled staff:

The isotype Dictionary is composed of more than 2000 such symbols to be used in various instructional materials.

VI Functions of Illustrations:

Illustrations in textbooks fulfill several functions:-

1. They attract our attention.
2. They provide eye-appeal and interest to the viewer.
3. They illustrate and interpret the text materials.

It may be done either by explaining the text part or by replacing words in textbooks.

4. They cement a visual image in the reader's mind and consequently lengthen his memory for it. It is better to use a telling or dramatic illustration to mark an idea indelibly upon the memory of your reader.

VII Chief Characteristics of a good illustration

1. A good illustration should be relevant and significant to the text materials.
2. An illustration should be a complete unit in itself - a good design.
3. It should be accurate, authentic and truthful.
4. It should be appropriate to the age and class level of the pupils for whom it is designed & reproduced.
5. The different figures and objects shown should be recognizable immediately,
6. It must be simple in composition, proper in emphasis and easily understood.

7. Illustrations should ^{be} interesting and stimulating so that pupils study them seriously.
8. It should contain an intelligent selection of details with emphasis on focal points. Avoid unnecessary details that confuse the learner.
9. It should be attractive and artistic in elements and suggestive of reality e.g. green fields and mountains should be shown in proper colours.
10. It should be of suitable size, large enough to show details and small enough to be easily used or handled.
11. The correct proportion of things and objects should be maintained in an illustration.
12. The illustration should be a good print, clear and distinctly free from blemishes and dirt.

As Lamb has said in his book, named "Drawing for illustration-" An illustration not only interprets an idea expressed in some way, it must also physically fit the page that is waiting for it.

Review Exercises in School Textbooks

I. Introduction

The textbook occupies an important place in the formalized process of teaching and learning. It reflects the objectives to be realized and the extent and depth of subject-matter content to be learnt. It is based on a predetermined syllabus and provides a fuller exposition of the expected minimum to be covered by the class. Each topic included in the syllabus is further specified in the textbook in terms of the facts to be remembered, the concepts to be understood, and the principles to be applied in a coherent and meaningful way. The treatment of the subject-matter is strictly sequential, wherever such a sequence is inherent in the structure of the subject.

Each lesson in a textbook has two main parts -

(1) Selection, organization and presentation of facts, concepts, ideas, principles, illustrations, vocabulary, structures etc. depending upon the nature of the subject, and (2) review exercises based on the ground covered thus far. They are both dependent upon the contribution which the book is supposed to make to the realization of a set of well thought out predetermined objectives of the course and the quantum of knowledge to be acquired by the pupils as delineated in the syllabus. Preparation and presentation of review exercises is in no way a less important and arduous task. It is, no doubt, a creative task requiring a full grasp of the subtle nuances of the learning process and the dynamic structure of the mind of the learner and high level of mastery over the subject-matter both with respect to its depth and manoeuvrability. Below are discussed some of the

some of the uses and principles which may be taken into consideration while planning review exercises for a textbook.

II. Characteristics of a review exercise:

As implied in the name review exercises at the end of a lesson are exercises used by the learner to recapitulate, fix and deepen what has been learnt and to associate it with the rest of the preceding subject-matter. They may in some cases even prepare the ground for subsequent learning. They are based on objectives aimed at in the lesson. They may consist of a variety of forms of questions. The number of questions in a review exercise may **vary** from one to a full test on the topic covering a good many questions. The main characteristics of a review exercise can be classified as under:-

- (1) Objectives to be tested
- (2) Content to be covered
- (3) Forms of questions to be included
- (4) Organization of questions

(1) Objectives

A text-book is written to assist the teacher and the learner in the realization of some predetermined objectives in respect of the latter. Considerable literature has recently been produced on the determination of educational objectives for different stages and at different levels. Classwise and subject-wise objectives have also been worked out. The textbook writer is guided by these in the planning and preparation of his book. The subject-matter content in the textbook is supposed to facilitate the realization of these objectives while the review exer-

-cises when used as tests, indicate as to how far the desired change has taken place. They have, therefore, necessarily to be based on the very same objectives.

An objective indicates the direction and extent of change that is expected to take place in the pupil as a result of undergoing a particular educational experience. It is a kind of modification in the psychological or physical makeup of the learner aimed at by the planner of his educational programme. There are usually more than one objective for a course. Subjectivise objectives are dictated by the social needs, individual make-up of the learner, and the nature of the subject. They have to be stated in very specific terms so as to become meaningful to the teacher. Broadly speaking they may be classified as under:-

- (a) Knowledge at the recall and recognition level
- (b) Understanding
- (c) Application
- (d) Skills
- (e) Attitudes
- (f) Interest
- (g) Personal and social traits.

Each one of the above requires further clarification which shall not be tried here. But if all these objectives are to be realized, the textbook must reflect them. Therefore, the questions given in the review exercises should not merely test information but they should also be based on understanding, application, etc

(2) Content

The content of a review exercise is governed by the content of the lesson as such. A question in a review exercise may be global in nature or based on some specific item of knowledge. Care is to be taken that no significant point is left untouched in the review exercise as a whole. Some of the questions may be so framed as to enable the pupil to relate his earlier knowledge with the one acquired in the lesson. Questions preparatory for an understanding of the subsequent content and based on the one under consideration may also prove very helpful in making the learner appreciate interdependence of topics discussed in the book and the wholeness of what he is learning.

(3) Forms of Questions

A review exercise can consist of a variety of questions. It may have essay type or long answer questions, short answer questions, or objective type questions. Statements directing the learner to look back into the lesson for some specific point, or to consult some reference to develop a deeper understanding of what has been covered in the lesson, or to undertake some group or individual tasks also form useful parts of a review exercise. Asking the learner to frame his own questions in specific forms on what he has studied is another useful activity provided for in a review exercise.

The essay type or long answer question is useful to test the abilities to recall and organize the material in a coherent, sequential and meaningful way. It may be used only when an overall review of a series of points is called for. Care should be taken to see that the question is clearly worded, is in a

language intelligible to the learner, and is well-defined in scope. Giving a question requiring a learner to reproduce all that he has learnt in the lesson is neither useful nor desirable. The maximum length of an essay type question in class V should be about 100 words.

The short answer question is a very potent form of question to be used in a review exercise. It is capable of testing most of the objectives which can be tested through the written medium. It also makes possible the gauging of the learned content at different depths. The answer to a short answer question may range anywhere from one word or figure to twenty to thirty words in class V. Simple recall and completion type questions may also be considered as short answer questions and freely used wherever necessary.

The objective type question is the most difficult to set and so should be used only sparingly. It is again a very potent tool for testing a variety of objectives as also the content at different levels of depth. The following three varieties are recommended for class V:-

- (a) True-false
- (b) Matching type
- (c) Multiple choice.

These forms should not be used unless adequate competence has been developed in the framing of such questions. Poorly framed objective type questions retard learning and amount to a wastage of space which could be utilized for some better purpose. When carefully framed and used they prove to be very

useful tools in the hands of the teacher to develop his lesson and of the learner to fix his learning. They are also useful in discovering significant gaps in learning.

(4) Organization of the questions

Organization of questions in a review exercise is an important consideration. The questions should not be put randomly. They should conform to some predetermined plan. They can be arranged lengthwise, objectivewise, formwise, subsequently, difficultywise, spirally or in a combination of all these. Coming at the end of the lesson they may be arranged in the same sequence in which the lesson has been developed or in any other order adequate for providing a fairly valid estimate of the coverage of the objectives and the content of the lesson. As far as possible different forms of questions may be kept distinct from one another.

III. Placement of review exercises

Evidently a review exercise as its name suggests must come at the end of the lesson. But it is necessary only when the purpose is to review the lesson as a whole. As a matter of fact there should be no rigidity about the placement of review exercises. Questions can be put at the end of each major point of learning. They can be put at the ends of the sections and finally at the end of the lesson. If a separate work-book is planned, then no questions need be put in the text-book at all. The questions in the work-book should develop in correspondence with the development of the content in the text-book. An overall

review exercise or a set of exercises at the end of the book or the work-book may be very helpful. They may be on higher objectives and more comprehensive in coverage.

IV. Uses of review exercises

Review exercises are to be used for reviewing the lesson. They can be used in question papers by the teacher. They can be used for diagnostic purposes. The student can use them for self-evaluation. They are also useful as practice exercises for fixing learning.

વિષય:-ગુજરાતી-બુધ્ધિ : અહેવાલ

૪: વિષયવસ્તુની પસંદગી :- (Selection of Content)

૧. હેતુનિર્ધાર :- વિષયવસ્તુની વરણી સમગ્ર શિક્ષણના હેતુઓ તેમજ વિષયશિક્ષણના સામાન્ય અને વિશિષ્ટ હેતુઓને (Specifications) ધ્યાનમાં રાખીને કરવી જોઈએ.

૨. વિષયસ્વરૂપ :- ભાષા એ પ્રાથમિક કક્ષાતકલગી વિષય હોઈને ભાષાના પુસ્તકો જ્ઞાન કે માહિતીને બદલે શ્રવણ, વાંચન, કથન, લેખન જેવી પાયાના કૌશલ્યોની (skills) કેળવણીની દ્રષ્ટિએ પ્રવૃત્તિસૂચક સામગ્રીનો સમાવેશ કરે તેમ થતું જોઈએ. શ્રેણી ૫ થી ૭ સુધીમાં "વાચન" અને "લેખન" ના કૌશલ્યો સવિશેષ ધ્યાનમાં લેવાવાં જોઈએ.

૩. વિચારગત સામગ્રી :- (Ideational Content)

અ. મૂલ્યો :- (Values) વિષયવસ્તુની વરણી ભારતીય જીવન અને સંસ્કૃતિનાં મૂલ્યોને ધ્યાનમાં રાખીને કરવી જોઈએ.

બ. જીવનશિક્ષણ :- વિજ્ઞાન અને તકનીક (Science & Technology) ના વિકાસને પરિણામે સામુદાયિક જીવનમાં અસ્તવસ્તવ પરિવર્તનોના પરિચયના સંદર્ભમાં અપેક્ષિત અનુકૂળનને (adjustment) ધ્યાનમાં રાખીને વિષયવસ્તુની વરણી કરવી જોઈએ.

ક. આંતરરાષ્ટ્રીય જીવન :- પારસ્પરિક જીવનને પોષે એ દ્રષ્ટિએ દેશ વિદેશના જીવન અને સાહિત્યમંડળી વિષયવસ્તુની વરણી કરવી જોઈએ.

૩. અનુબંધ:- અન્ય વિષયોના વિષયવસ્તુ સાથેના અનુબંધને ધ્યાનમાં રાખીને વસ્તુવરણી કરવી જોઈએ.

૪. વશકક્ષા:- વિષયવસ્તુની કક્ષા વિષયાર્થીઓની વય અને સિધ્ધિ (achievement) ને ધ્યાનમાં રાખીને નક્કી કરવી જોઈએ.

૪. ભાષાકીય વસ્તુની પસંદગી : (Selection of Linguistic Content)

અ. શિષ્ટભાષા :- દ્વનિ, શબ્દ, વાક્ય, અને વિશિષ્ટ પ્રયોગોની પસંદગી ભાષાના માન્ય ધોરણો સાથે સુસંગત હોવી જોઈએ.

બ. વ્યાકરણ સ્વરૂપ :- ભાષાકીય વસ્તુની વ્યાકરણની વિગતોની પસંદગી ભાષાના વ્યવહાર સ્વરૂપ અનુસાર ઉપયોગને ધ્યાનમાં રાખીને કરવી જોઈએ.

ક. બોલીઓ:- ભાષાના સામર્થ્યને રજૂ કરે તેવા શબ્દો અને શબ્દપ્રયોગો સુજરાતની મુખ્ય પ્રાદેશિક બોલીઓમાંથી પસંદ કરવા જોઈએ.

૬. બોલાતી ભાષા :- કેટલીક વિશિષ્ટ ભવન - પરિસ્થિતિમાં (life situation) બોલાતી ભાષાને ભાષાકીય વસ્તુની પસંદગીમાં સમાવિષ્ટ કરવી જોઈએ.

:ખ: ૧. વિષયવસ્તુ ક્રમાંકન :-

અ. હેતુઓ અને સ્પષ્ટીકરણો:- વિષયશિક્ષણના સામાન્ય અને વિશિષ્ટ હેતુઓ, શ્રેણી પ્રમાણે વિભાજન અને ક્રમાંકન કરવું જોઈએ. :શ્રેણી ૫, ૬, ૭, માટે આ કાર્ય કરવાનું બાકી રહે છે. :

બ. મૂલ્યો :-

મૂલ્યોનું ક્રમાંકન અમતી પ્રમતી દ્રષ્ટિએ તેમજ સાતત્યની દ્રષ્ટિએ કરવું જોઈએ. : નોંધ :- આનું ઉદાહરણ જોડેલા કાગળમાં રજૂ કર્યું છે. :

પરિશિષ્ટ - ૧.

ક. આધુનિકતા :-

આધુનિકતા લાવનારાં તત્ત્વોનું ક્રમાંકન શ્રેણી પ્રમાણે કરવું જોઈએ. : નોંધ :- આનું ઉદાહરણ જોડેલા કાગળમાં રજૂ કર્યું છે. : પરિશિષ્ટ-૨.

ડ. દેશ વિદેશનું સાહિત્ય :-

૨. ભાષાકીય વસ્તુનું ક્રમાંકન :- (Gradation of Content)

અ. શબ્દ ભંડોળ :- અર્થ અને રચનાને ધ્યાનમાં રાખીને સરળથી સંકુલ અને અભિધાથી વ્યંજનાને ધ્યાનમાં રાખીને પર્યાયવાચી, સમાનાર્થી, વિરોધાર્થી, અનેકાર્થી, સમૂહવાચી જેવા શબ્દોનું ક્રમાંકન કરવું જોઈએ.

બ. વ્યાકરણ :-

વ્યાકરણની વિગતોનું ક્રમાંકન તેની ઉપયોગિતા અને વપરાશની અધિકતાને ધ્યાનમાં રાખીને કરવું જોઈએ.

૩. વિષયવસ્તુની રજૂઆત :- (Presentation of Content).

અ. એકમ (Units)

વિષયવસ્તુની રજૂઆત યોગ્ય એકમો પાડીને કરવી જોઈએ. એકમને અનુકૂળતા પ્રમાણે એક કે વધારે પાઠોમાં વિભાજિત કરી શકાય.

બ. શબ્દો :-

એક એકમમાં નવા શબ્દોની સંખ્યા મર્યાદિત રહે એ જોઈએ. અને એક વાર વપરાયેલા શબ્દો પાઠમાં અને પછીના પાઠોમાં પણ વપરાવા જોઈએ.

ક. શબ્દસૂચી :-
(Glossary)

પા. પુસ્તકોમાં વપરાયેલા શબ્દોની સૂચી

આપવી જોઈએ. આ સૂચી એકમને અંતે અથવા તે પુસ્તકને અંતે આપી શકાય.

૭. ચિત્ર - યોજના :- વિષયવસ્તુની રજૂઆતમાં ચિત્રો મહત્વના છે.
(Illustrations) એ વિષયવસ્તુને - સ્પષ્ટ કરે
- પૂરક બને
- સંબંધિત હોય તે જરૂરી.
- ચિત્રો યોગ્ય જગ્યાએ મૂકાવાં જોઈએ.
- યોગ્યરીતે વહેંચાયેલાં હોવાં જોઈએ.
- સમગ્ર પા.પુસ્તકમાં ૧૦ ટકા જેટલું પ્રમાણ જળવાવું જોઈએ.
(Minimum)

૮. સ્વાધ્યાયરચના :- (Review Exercises)

૧. દરેક પાઠને અંતે સ્વાધ્યાયો આપવાજોઈ
૨. દરેક એકમ પર આધારિત એકમ-કસોટી
(Unit Test) પુસ્તકને અંતે રજૂ કરી
શકાય.

૩. સ્વાધ્યાયનું સ્વરૂપ વિવિધ પ્રકારનું હોઈ શકે. જેમાં ટૂંક જવાબી (Short-answer Questions) પ્રશ્નોનું પ્રમાણ વધારે હોઈ શકે. આમ છતાં નિબંધાત્મક અને વસ્તુસૂચી પ્રશ્નો : વિવિધ પ્રકારો સાથે પણ સ્વાધ્યાયજનક સમાવી શકાય.

૪. સ્વાધ્યાયો વિષયશિક્ષણનાં શક્ય તેટલા બધા જ હેતુઓને આવરી લેતાં હોવાં જોઈએ.

૫. "અધ્યયન સ્વાધ્યાયો" અને "નિદાનાત્મક સ્વાધ્યાયો" પણ રચી શકાય.

૫: સંબંધિત શિક્ષણસામગ્રી:— (Related Instructional Material)

૧. શિક્ષક — નિદર્શિની

૨. વિદ્યાર્થી — કાર્યપોથી

૩. પૂરક વાચનસામગ્રી

નોંધ:— ઉપરોક્ત બંને પ્રકારના પુસ્તકો

જુજરાતીના પાઠ્યપુસ્તકની સાથે

તેના લેખકો દ્વારા રચાવા જોઈએ.

પરિશિષ્ટ — ૩ અને ૪:—

સંબંધિત શિક્ષણસામગ્રીના પુસ્તકોનું

સ્વરૂપ-વસ્તુસામગ્રી અને રજૂઆત-સાથે

જોડેલી નોંધથી સ્પષ્ટ કર્યું છે.

૫: ચર્ચા નિષ્કર્ષ :—

૧. સને ૧૯૬૭ થી શરૂ થયેલો ધોરણ ૧ થી ૪ નો અભ્યાસક્રમ જે તરાહ (pattern)

પ્રમાણે તૈયાર થયો છે તેને વળગી રહેતી શ્રેણી

૫, ૬, અને ૭ નો અભ્યાસક્રમ પણ તૈયાર થવો જોઈએ.

૨. શિક્ષણના સમગ્ર હેતુઓની અને શિક્ષણના તબક્કાવાર

હેતુઓની સમજૂતિ આપતી નોંધ અને વિષયશિક્ષણ

અંગેની ભૂમિકા આપતી નોંધ પરિપક્વિત થવી

જોઈએ.

-: પાઠ્યપુસ્તકની રચના અને જીવનના મૂલ્યો:-

પરિચિટ - ૧.

ભાષા શિક્ષણમાં આપણે બાળકોને આ સંલમાં કૌશલ્ય પ્રાપ્તિની સુનિશ્ચિત દિશામાં વાળવાનો પ્રયત્ન કરીએ છીએ. સાથે સાથે બાળકના સંસ્કાર પડતરનો પાથો પણ જીવનના મૂલ્યો દ્રષ્ટિ સમક્ષ રાખીને અહીંથી જ નાખવાનો છે, એ ચ ન ભૂલાવું પડે. ચીન, જાપાન અન્ય દેશોએ પણ અપેક્ષિત જીવનમૂલ્યો તરફ બાળકોને વાળવા માટે પ્રાથમિક ધોરણોથી જ પાઠ્ય-પુસ્તકો વડારા પ્રયત્નો કર્યા છે. જીવનનું પ્રાથેય આપનારાં અને આકૃતિ કાલના નાગરિકોને કંડારનારા અજી મૂલ્યોને જે વિભાગોમાં આપણે વહેંચી શકીએ.

:૧: જીવનના વ્યવહારગત મૂલ્યો.

:૨: જીવનના વિચારગત મૂલ્યો.

જીવનના વ્યવહારગત મૂલ્યો:-

ધોરણ ૧ થી ૪

ધોરણ ૫ થી ૭

ધોરણ ૮ થી ૧૨

૦ દયા

૦ અતુકલ્પન

૦ સમાનતા

૦ વહિલો અને શુરજનો

૦ વીરતા

૦ સહનશીલતા

પ્રત્યે આદર

૦ ક્ષમા

૦ પરાક્રમ

૦ સત્ય પ્રિયતા

૦ જીદાર્ય

૦ સ્વાર્થ

૦ મૈત્રી

૦ સાહસ

૦ પુરુષાર્થ

૦ શ્રમ નિષ્ઠા

૦ પરસ્પરની સમજ અને

૦ શ્રદ્ધા

૦ પ્રામાણિકતા

વિશ્વાસલાવના

૦ મહત્વાકાંક્ષા

૦ નૈતિકતા

૦ ધર્મસહિષ્ણુતા

૦ ધૈર્ય

૦ સ્વાવલંબન

૦ ખેલ દિલી

૦ નિર્વેરસાવના

૦ રાષ્ટ્રિયતા અને ભાવત્મક એકતા

૦ પરમીલન

૦ નિર્ભયતા

૦ સહાનુભૂતિ

૧ પરિવર્તનશીલતા

૨ નિર્ભયતા

૩ નિર્ભયતા

જીવનના વિચારગત મૂલ્યો:-

- ધોરણ ૧ થી ૪ માટે જરૂરી નથી જોયું.
- ધોરણ ૫ થી ૭ માટે
ઉત્સાહ, સત્સંકલ્પ, ખોજવૃત્તિ, તાકિત, આત્મગૌરવ,
- ધોરણ ૮ થી ૧૧.
- હૈયા ઉકલત
- વિચારક્ષમતા
- પ્રયોગશીલતા
- રચનાત્મક કૃષ્ટિ
- આશાવાદી કૃષ્ટિકોણ

જીવનના વ્યવહારગત અને વિચારગત મૂલ્યોને વિભાજિત કરવાનો પ્રયત્ન આમ તો કાંઈક હાથ્યાસ્પદ બની રહે તો એ કેટલાંક મૂલ્યોને આપણે અન્ય ઉપર પ્રાથમિકતા આપવી જ રહી. બાળકના બૌદ્ધિક વિકાસ કે પરિપક્વતાને કૃષ્ટિ સમક્ષ રાખી પાઠ્યપુસ્તકમાં ક્રમે ક્રમે જીવનના આ મૂલ્યોને વિવિધ પરિસ્થિતિઓમાં રોચક અને રસપ્રદ થઈ પડે એ રીતે મઠી શકાય.

પરિશિષ્ટ - ૨

વિષય

કક્ષા - ૫

- (૧) બસ-પ્રવાસ, રેલગાડી-પ્રવાસ.
- (૨) માલની ઢેરફેર - લોરી વ્હારા.
- (૩) આવાસ
મકાનની બનાવટ - હવા ઉજાસની દૃષ્ટિએ.
- (૪) ધોરી માર્ગ અને કાચા રસ્તાઓનું મહત્વ.
(ગ્રામવાસીઓના શ્રમદૃષ્ટિએ)
- (૫) ટ્રેકટર - તેના ઉપયોગ - તેની ખેતીવાડી અને ગ્રામજનો પર અસર.

કક્ષા - ૬

- (૧) ગામડામાં રેડિયોનો ઉપયોગ.
- (૨) નિકાસ - દેશી ખાદ્યપદાર્થોની નિકાસ - સ્થાનિક બનાવટોની.
- (૩) ગામડાની અને અન્ય કૃષિશાળા.

કક્ષા - ૭

- (૧) ગેસ પ્લાન્ટ - ગ્રામ વિસ્તારમાં ઉપયોગ.
- (૨) ટ્યુબવેલ - ખેતી પર અસર - સિંચાઈ પ્રણાલિકામાં.
- (૩) લઘુ ઉદ્યોગો - તેનું મહત્વ.
- (૪) ગામડામાં વીજળી - ગ્રામ ઉદ્યોગો પર અસર - ફેરફાર.

Appendix - 3

Things to go in a hand book

Handbooks - Teacher's Editions - are meant for the teachers to teach the book to the children.

This may therefore include:

- (1) About the philosophy of teaching a particular subject: various methods and the method adopted in it. But there should be a clear note that this is simply a help and not a final thing. Teachers may use their own ways according to the needs of the children.
- (2) Lessons' plans: A format:
 1. Introduction or building the background for making the children ready to read the lesson. This may be done in various ways.
 2. Introducing the new words in the lesson: (1) Presenting them in meaningful contents; (2) Writing them on the BB one by one, asking the children to see a word as a whole and say it, recognise it and say it when asked: (3) drilling: making a word 'Pakka (A) (S) (I) with respect of sound, Form, Meaning
 3. Guided reading: The children are asked to read silently in the guidance of the teacher: The teacher asks the children to read a line or two, or a para, or a page and then put such questions as may elicit the required meaning of the lines through answers; It means, the children read to find out some thing for themselves, ofcourse with the help of the teacher.

4. Reviewing the vocabulary; Several devices to be planned (what is the rootword, what is the antonym / synonym / opp: gender/opp. number, what prefix/suffix/sandhi/ compd. and use this word in our own sentence/ in different meanings, if any. Now the vocabulary is evermore 'pakka' () and the children are ready to read loudly.
5. Purposeful re-reading: This is re-reading, aloud, with some purposes as to find out the details (who said what) to say in one's own words, to answer a (why) question, to dramatise (involving more than one and so on so forth. The boy reads a thing with some purpose to gain something and find out something. This will increase the speed of reading and understanding both. This will give him modulation and intonation. He will learn the use punctuation both in reading, speaking and writing and listening also.
6. Developing the reading skills:
 - a. word study skills
 - b. comprehension skills(as discussed in the group last evening)
7. Enrichment activities:
 - a. Correlation with other subjects
 - b. Correlating with literature
(Poem, song, drama, story) activities related to the lesson.
 - c. development of the four skills
 - d. creative drawing

8. Remedial work

- (1) To explain the purpose and the procedure of solving the tests.
- (2) In the end it may contain a glossary explaining in terms of definitions all the new terms coined so that the teachers may understand them as they appear in the guide book.

comprehensive exercises word-study exercises (generalising,
writing exercises (short type answers), creative drawing etc.

3. A list of various skills covered in the exercises be given in the beginning: e.g. gender 4, 9, 48

Drawing conclusive 8, 3, 9, 50.

4. Time, purpose (of the exercise) and instruction (for the teacher and the children) may be given for each exercise.
5. The illustration, if any, should be the same block as in the lesson of the text book.
6. Type for the text of the pupil's W/B should be the same as in the text book: For the teachers it may be smaller (Time, purpose inspection)

Kindergarten to the Fifth Grade Workbook

I. Instructional Objectives of the Public Workbook:

- (1) To determine the learning acquired through books.
- (2) To determine the learning in relation to different skills related in the particular lesson.

- (3) To provide feedback to the children.

- (4) To provide the work of the teacher and the learning of the child to be recorded and be programmed.

2. Through review exercises have been given in the guide (to develop

- (a) To determine the points of teaching, to clear
- (b) To determine the points of teaching, to clear
- (c) To determine the points of teaching, to clear
- (d) To determine the points of teaching, to clear
- (e) To determine the points of teaching, to clear
- (f) To determine the points of teaching, to clear
- (g) To determine the points of teaching, to clear
- (h) To determine the points of teaching, to clear
- (i) To determine the points of teaching, to clear
- (j) To determine the points of teaching, to clear
- (k) To determine the points of teaching, to clear
- (l) To determine the points of teaching, to clear
- (m) To determine the points of teaching, to clear
- (n) To determine the points of teaching, to clear
- (o) To determine the points of teaching, to clear
- (p) To determine the points of teaching, to clear
- (q) To determine the points of teaching, to clear
- (r) To determine the points of teaching, to clear
- (s) To determine the points of teaching, to clear
- (t) To determine the points of teaching, to clear
- (u) To determine the points of teaching, to clear
- (v) To determine the points of teaching, to clear
- (w) To determine the points of teaching, to clear
- (x) To determine the points of teaching, to clear
- (y) To determine the points of teaching, to clear
- (z) To determine the points of teaching, to clear

હિન્દી - જૂથકાર્ય : અહેવાલ

ચોથા ધોરણ સુધી માતૃભાષાનું જ્ઞાન મેળવ્યું. બાદ બાળકો પાંચમા ધોરણમાં હિન્દી શીખવાની શરૂઆત કરે છે. હિન્દી ગુજરાતના બાળકો માટે હિન્દી એ બીજી ભાષા : Second Language :- છે. આજ કારણે હિન્દી અને માતૃભાષાનાં હેતુઓમાં પણ સિન્નતા રહે છે.

પાંચમી શ્રેણી માટેના અભ્યાસક્રમમાં હિન્દી શિક્ષણના હેતુઓ આપવામાં આવ્યા છે. આ હેતુઓ ધો. ૫ થી ૧૧ સુધીના છે, એવું ત્યાં સૂચવાયું છે. આપણે પાઠ્યપુસ્તકો લખનારની સુવિધા માટે આ હેતુઓનું ધોરણવાર વિભાજન કરી નાખવું પડે.

આ સાથે આપણે હેતુઓનું ક્રમાંકન કરી શૈક્ષણિક પ્રવૃત્તિઓ અને ભાષાક્રીય સામગ્રી અંગે પણ સ્પષ્ટતા કરી લેવી પડે. પાઠ્યપુસ્તક સામગ્રીના મંથનમાં આ પ્રમાણેનું ક્રમાંકન અત્યંત ઉપયોગી થઈ પડશે.

૨. ૫ માં ધોરણના અભ્યાસક્રમમાં "વિદ્યાર્થી સામાન્ય સાહિત્યનો પરિચય પ્રાપ્ત કરે" એ અંગે સૂચવવામાં આવ્યું છે. આનો અર્થ વિદ્યાર્થી સાહિત્યનો પરિચય પ્રાપ્ત કરે એવો કરવો નથી. બાળક હિન્દીમાં લખાયેલી વાતમાં સામાન્ય રીતે સમજી શકે એવો જ આ વિધાનનો સૂચિતાર્થ છે. આપણે બાળકોને વાતચીતમાં કે સામાન્ય વ્યવહારમાં વપરાતી હિન્દીથી પરિચિત કરવા ધારીએ છીએ.

૩. પ્રસ્તુત અભ્યાસક્રમમાં પાઠ્યસામગ્રી માટેના કેટલાક વિષયો પણ સૂચવવામાં આવ્યા છે. આ વિષયોનું ધોરણવાર ક્રમાંકન પણ એટલું જ આવશ્યક છે. તદ્દપરતિ ચથાવકાશ જીવનના સનાતન મૂલ્યોને પણ એમાં સમાવિષ્ટ કરાવ્યાં પડે. આ મૂલ્યોમાં પણ નીતિમત્તા, ચરિત્રગઠન, રાષ્ટ્રિયતા, એકતા અને સહયોગ વગેરે મૂલ્યોને અગ્રિમતા મળવી પડે.

૪. હિન્દીના અભ્યાસક્રમમાં જે મુદ્દાઓ આપવામાં આવ્યા છે, એમાં સાતમા મુદ્દા પર થોડો બહુ વિચાર કરવો આવશ્યક બની રહે છે.

એ પ્રમાણે આવશ્યક એવા કમીકનો નમૂનો નીચે આપવામાં આવ્યો છે,
એ જ પ્રમાણે અન્ય મુદ્દાઓનું કમીકન પણ કરાવું થતે.

પાંચમું ધોરણ:- વિષયના મુદ્દાઓ:-

ધર, રસોડું, બજાર, શાળા.

છઠ્ઠું ધોરણ :- પોસ્ટ ઓફિસ અને હોસ્પિટલ.

સાતમું ધોરણ:- બેન્ક અને રેલ્વે સ્ટેશન.

૫. ભાષાકીય કૌશલ્યોની પ્રાપ્તિ અને પાઠ્યપુસ્તક:-

હિન્દી અને ગુજરાતીમાં સમાન રીતે વપરાતા હોય એવા એક સમાન શબ્દોની સંખ્યા ૫૦૦ થીય વધુ છે. પાઠ્યપુસ્તક રચયિતાએ આ પરિસ્થિતિનો પૂરેપૂરો ફાયદો ઉઠાવવો થતે. આવા શબ્દોની સૂચિ આજ આશકથી અભ્યાસક્રમમાં આપવામાં પણ આવી છે.

૬. હિન્દી અને ગુજરાતીમાં જે સામ્ય છે આશીર્વાદરૂપ છે. પરંતુ કેટલીક પરિસ્થિતિમાં આપણને આ બામક સામ્ય વિધનરૂપ પણ નીવડે છે.

હિન્દી ભાષાના પ્રયોગમાં કે એના પ્રત્યયોના પ્રયોગમાં કેટલાક અપવાદો છે. આ અપવાદોથી બાળકોને અવશ્ય પરિચિત કરાવવાં થતે. આવક અપવાદોની એક સૂચિ શિક્ષકોની હેન્ડબુકમાં આપવામાં આવે તો એ ઉપકારક બની રહેશે.

૭. માતૃભાષામાં તો જોમભયાં કેટલાક રૂઢપ્રકોગોનો ઉપયોગ શીખવો એ બાળકો માટે અત્યંત આવશ્યક બની રહે છે. પરંતુ હિન્દીમાં આપણે બાળકોને બાસકરીને રોજબરોજના વ્યવહારમાં રૂઢ એવા પ્રયોગોની જ સમજ આપીશું. : અર્થલિંગ પ્રયોગો "કે" સામ્ય કે તળપદા પ્રયોગોથી " તેમને પરિચિત કરવા જરૂરી નથી.

૮. બાળકો હિન્દી ભાષામાં અપેક્ષિત પ્રાવિણ્ય પ્રાપ્ત કરી શકે એ હેતુથી "કાર્યપોથી" અથવા "સ્વાધ્યાયપોથી" પણ તેમના હાથમાં મૂકાવી

જોઈએ, જો આ તાત્કાલિક ન કરી શકાય એવું હોય તો પાઠ્યપુસ્તકના અંતમાં થોડી વધારાની કસોટીઓ પણ અપાવી ધટે.

૬. શિક્ષકો પોતાના શિક્ષણકાર્યને વધુ તેજસ્વી અને ક્ષમતાયુક્ત બનાવી શકે એ હેતુથી તેમના હાથમાં "હેન્ડબુક" મૂકાવી અત્યંત આવશ્યક બની રહે છે.

૧૦. હેન્ડબુક, સ્વાધ્યાયપોથી અને સ્વાધ્યાયમાં પાઠ્યસામગ્રીને કેવી અલગઅલગ રીતે ન્યાય આપી શકાય, એ પર પણ પુખ્ત વિચાર થવો ધટે.

REPORT OF THE SOCIAL STUDIES COMMITTEE AT THE WORKSHOP
ON "DEVELOPING PRINCIPLES AND CRITERIA FOR PREPARING
AND REVISING TEXTBOOKS"

The Social Studies Committee deems it fit to make the following suggestions for the preparation of the Social Studies text-books to the Government of Gujarat as the result of the study, review and the discussion of the Social Studies Syllabus for Std. V, VI and VII.

I Criteria for preparing the textbooks in Social Studies

- A Planning the Text-Book
- B Selection of the Content
- C Organization and Presentation
- D Illustrations
- E Review Exercises
- F Other Considerations

II General Recommendations for Social Studies Syllabus and Text-book writing.

Criteria for preparing the text-book in Social Studies

Planning the Text-books

The subjects of Social Studies has its unique place in the curriculum looking to the part it can play in building up the essential knowledge. Social skills, critical thinking, healthy attitudes and everything which contributes to the development of a good citizen. Hence the following points should be kept in view while planning the text-book.

- (1) Overall planning to be done keeping in view the objectives laid down for the subject.
- (2) Importance to be given to the contributions made by different factors-human, environment, social etc. to the progress of mankind.
- (3) Importance to be given to the efforts made by man to control and change the environmental factors for promoting good life.
- (4) Helping the students to appreciate the cultural heritage of mankind and contributions made by various peoples.
- (5) Helping the children to understand the part played by different social and political institutions and the contribution one can make through them.
- (6) Developing the civic sense in the pupils needed for the democratic way of life.
- (7) Emphasizing the inter-dependence of the individual, states and nations on each other, and the co-operative efforts needed for the prosperity of all. This will help in promoting national integration and developing international outlook.

- (8) Giving consideration to the topics in physical geography and graphs covered in Science and Mathematics.
- (9) Giving proper place to the high lights of the chapter, exercises and activities for the pupils at the end of the chapter.
- (10) Mentioning reference material and supplementary reading books for the pupils at the end of the chapter.

B Selection of the Content

- (1) It should be accurate, authentic and up-to-date.
- (2) Giving proper weightage to the different aspects and points of the content keeping in view the objectives laid down for the subject.
- (3) Coverage of the whole syllabus.
- (4) The level of the abilities of a particular age-group of the children.
- (5) Promoting development of different concepts, skills, understandings, relationships and attitudes.
- (6) Giving consideration to the geographical and historical matter in the language and science text-books.

C Organization of the Content

- (1) Chronological order should be observed in History.
- (2) Psychological approach should be followed as far as possible.
- (3) Logical order of the matter should be kept in view.
- (4) Linking of units and continuity of matter is considered to be essential.

- (5) Man's achievements and his contributions to the welfare of the society should be aimed at.
- (6) Points of correlation of the subject with other subjects viz. history, geography, economics, literature and current events should be clearly brought out.
- (7) Illustrations should be given proportionate weightage roughly about 40% of illustrations.
- (8) Each topic should be divided into proper and sizeable units and subunits, as far as possible.

Presentation

While presenting the textual material the following three points should be considered:

- (1) Matter
- (2) Method
- (3) Language

Matter:- Matter should be presented keeping in view the objectives laid down in syllabus and also the age group of the pupils.

Relevant references should also be given along with the matter.

Keeping in view the previous knowledge, understandings of various concepts by pupils impartial and unbiased presentation of the matter should be aimed at.

Terminology and concepts should be properly clarified.

Method: Psychological approach in different ways like letter form, story form, dialogues, travels, source material method should be followed.

While presenting the matter interest of the children and effectiveness should form the main criteria. ()

Language:

Lucidity, simplicity and correctness/language must be considered essential. ()

Illustrations:

Illustrations occurring in the text-books must be demonstrative like posters, charts, time-charts, maps, bold-line drawings, sketches, lime-drawings, etc. As illustrations are accepted as a powerful vehicle of imparting instruction, it should be drawn more accurately, artistically and judiciously. It is an accepted fact that 80% of the pupil folk are eye-minded, and hence the value of illustrations in a textbook has its own important rôle to play. The types of illustrations can majorly be divided into three suitable groups, viz. (a) demonstrative, (b) documentary and (c) artistic illustrations.

The purpose of illustrations is mainly (a) explanatory (b) elucidatory (c) substituting experiences (d) creating desired impression (e) of summarising nature, and (f) representing element of reality. The illustrations should have relevance, with the text content. As the illustrations speak themselves, their place in any text book and more so in Social Studies text book is of vital importance.

In the textbooks of Social Studies, the illustrations occurring may be of the following nature:

- (1) Maps,
- (2) Photographs
- (3) Time-charts
- (4) Bold-line drawings
- (5) Self-explanatory illustrations and graphs
- (6) Cartoons
- (7) Percentage of illustrations

- (1) Maps: Maps should be distinct, in bold lettering, appropriately coloured and should not be overcrowded with details. The details in the maps to be included and represented keeping in view the intellectual level of the pupils for whom the maps are meant. The maps must be simple in character, pictorial, and may be one half or one third size of the page of the text book.
- (2) Photographs: The actual photograph of a particular personage or the class in a typical dress and ornaments should be selected, alongwith the geographical background. This picture should represent the actual characteristic, realism and must depict their social activity. The authentic photographs taken may be of some historical monuments or may be depicting some landmarks in national development.
- (3) Time-charts: Time-charts are the powerful media for communicating the time in proper perspective and in the context of contemporary events occurring in the syllabi concerned. There should be minimum details. The time chart must present material using symbols to the maximum and the verbal presentation must be reduced to the minimum, and selective. The time chart should be coloured and attractive. The time chart should be pithy, pointed and symbolic.

- (4) Bold line Drawings: Where there are bold line drawings, there are thick lines. The details are not there and they are simple drawings, and focus the attention of a child. The number of bold lines should be limited. As these drawings are symbolic and simple to draw, they should be ample in quantum.
- (5) Self explanatory illustrations and graphs: This should represent one theme or one idea. These illustrations should be properly coloured, and universal in presentation.
- (6) Cartoons: The cartoons have a nice appeal to the youngsters. The cartoons must be humorous,, but should not misinterpret the idea.
- (7) Percentage of illustrations: The percentage of illustrations prescribed by the Department of Education at present is meagre, hence, the increase of ten percentage in the present quota is desirable.

E Review Exercises

Review exercises should be given at the end of every Unit or sub-unit based on the following items:

- (A) (1) List of questions which should be related to subject matter.
- (2) The questions must be comprehensive.
- (3) They must be of value.
- (4) They must be motivating and challenging
- (5) They must be of various types.
 - (a) Diagnostic
 - (b) Review
 - (c) Preparatory
 - (d) Drill etc.

- (6) The questions must be inclusive of all the objectives such as
- a) acquisition of knowledge
 - b) development of understanding
 - c) application of knowledge
 - d) development of skills
 - e) development of desirable interests and attitudes
- (B) The vocabulary list should contain the essentials of the subject.
- (C) The list of projects and activities should also form the part of review exercises.
- (D) Problems for mini research should be listed.
- (E) Topics for reports and debates should be provided for.
- (F) Identification list should be provided.
- (G) Pupil's reference material should be given. This should be of (i) practical nature, of importance to pupils (ii) and upto date.
- (H) Items of dramatisation should be explored and the list for the same should also be given.
- (I) Wherever possible visits should be recommended.
- (J) Suggestions for collections/^{of} material of historical, geographical and cultural importance should be made.
- (K) Planning of exhibitions, wherever possible, should be encouraged and suggested.

Other considerations

The get-up of the text on the whole should be attractive, so that the child may be tempted to take it up to move the pages. The title-cover should be attractive and symbolic, such that the book may be less spoilt and can be used in subsequent years. The size and shape of the textbook must be keeping in tune with the modern trends. It may be matric size.

In order to make teaching more effective, teacher's handbook for the teaching of the textbook material should be prepared. In order to provide an impetus for self-learning a work-book for pupils based on the textbook is also equally essential.

The hints to the teachers included in the preface and at the same time glossary of words at the end of the textbook must be considered as essential for the textbook.

II. GENERAL RECOMMENDATIONS

:૧: શ્રેણી પ, ક, ઊ ના અભ્યાસક્રમમાં "સમાજવિદ્યા" શીર્ષક નીચે એ વિષયના મુખ્ય હેતુઓ આપેલા છે. અને તેના :૩" વિભાગમાં વિદ્યાર્થીઓ માટેની પ્રવૃત્તિઓ આપેલી છે. હેતુઓ અને પ્રવૃત્તિઓ સમગ્ર રીતે સમાજવિદ્યા વિષય માટે વિચારાયા છે. પરંતુ અભ્યાસક્રમના મુદ્દાઓ ઇતિહાસ, ભૂગોળ અને આપણો રાજ્ય વહીવટ એમ ત્રણ અલગ વિભાગ દર્શાવે છે. વળી સમાજવિદ્યા કદાચ પુસ્તકો :૧: ઇતિહાસ, :૨: નાગરિક શાસ્ત્ર, અને :૩: ભૂગોળ એમ બે ત્રણ રચના કરવાના છે. આ બાબતો એક બીજા સાથે સુસંગત નથી. શિક્ષણના મુખ્ય હેતુઓ બે પુસ્તક અગર ત્રણેય વિભાગ માટે જુદી જુદી રીતે વિચારાયા હોત તો વધુ ઉપકારક બનત. માત્ર હેતુઓ અને પ્રવૃત્તિઓ જ સમગ્ર રીતે વિચારવાથી સમાજવિદ્યાનો વિષય સંકલિત બનતો નથી.

:૨: અભ્યાસક્રમ પઠનારાઓએ શ્રેણી પ, ક, ઊના ઇતિહાસના અભ્યાસક્રમમાં જીવનચરિત્ર પ્રક્રિયા શ્રેણી પાંચ માટે ચાલુ રાખી છે. પરંતુ શ્રેણી ક અને ઊ ના ઇતિહાસના અભ્યાસ માટે સમયાતુકમની પ્રક્રિયા અપનાવી. પ્રાચીન યુગથી અર્વાચીન યુગનો ઇતિહાસ માત્ર બે જ શ્રેણીમાં :ધો. ક અને ઊમાં સમાવી ઇતિહાસનું ભારણ વધારી દીધું છે. જે યોગ્ય લાગતું નથી.

:૩: શ્રેણી પાંચના ઇતિહાસના અભ્યાસમાં જીવનચરિત્રોની સંખ્યા વધારે ગણાય. વળી જીવનચરિત્રોની ચાહીમાં ઐતિહાસિક હોવા વિષે શંકા હોય તેવી તેમજ જેમને માટે પ્રમાણસરની માહિતી મેળવવી દુષ્કારાળ્ય હોય તેવી વ્યક્તિઓના નામ આપેલાં છે. સારા પુસ્તકમાં આ બાબત અવરોધક હોવાથી તે અંગે પુનર્વિચારણા કરવી જરૂરી છે.

:૪: ગુજરાત રાજ્ય સરકારશ્રીએ પાઠ્યપુસ્તકોના રાષ્ટ્રીયકરણનો નિર્ણય કર્યો છે, ત્યારે અભ્યાસક્રમ અંગે કરાયેલા સૂચનો પ્રમાણે પુનર્વિચારણા પામેલા અભ્યાસક્રમ મુજબ સારા પુસ્તકો મેળવવા માટે પુસ્તકોને એક વર્ષ માટે ચકાસણી : try out : માં મુકી જરૂરી ફેરફાર સાથે અમલમાં મુકવા હિતાવહ છે.

- : ૫: પાઠ્યપુસ્તક લખવા માટે લેખકને આધારભૂત માહિતી અને બીજી મદદ તથા સગવડ મળી રહે તે માટે રાજ્યશિક્ષણલવન કે બીજી કોઈ સંસ્થાને એવા કેન્દ્ર તરીકે ઉપયોગ કરી શકાય તેવી વ્યવસ્થા કરવી જરૂરી છે.
- : ૬: શ્રેણી ૫, ૬ અને ૭ નો ઇતિહાસ, ભૂગોળ અને નાગરિક શાસ્ત્રના અભ્યાસક્રમના એકમો, શ્રેણી ૮, ૯, ૧૦ ના હાલના અભ્યાસક્રમમાં આવરી લેવાયા છે. તેના પરથી પ્રસ્તુત એકમોની કઠીનતાનો ખ્યાલ આવી શકે એમ છે. તેથી તે એકમોને શ્રેણી ૫, ૬, ૭ના અભ્યાસક્રમમાં કઠોરીતે આવરી લેવા તે બાબતમાં વિગતે માર્ગદર્શન જરૂરી છે.
- : ૭: પાઠ્યપુસ્તકો મેટ્રીક સાઈઝમાં અને ગ્લેઝર પ્રિન્ટ કાગળ ઉપર છપાય તથા તેમાં નિર્દેશક સામગ્રી, : illustrative material સ્વાધ્યાય, તથા પ્રવૃત્તિઓને યોગ્ય સ્થાન આપી શકાય તે હેતુથી પાઠ્યપુસ્તકોની પૃષ્ઠસંખ્યા વધારવા માટે વિચારણા કરવી જરૂરી છે.
- : ૮: શિક્ષણ કાર્યમાં શિક્ષકનું સ્થાન અત્યંત હોઈ શિક્ષકને વિષયશિક્ષણ માટે યોગ્ય માર્ગદર્શન મળી રહે તે હેતુથી પુસ્તક નિર્દેશની : Teachers' handbook : તૈયાર કરાવવી જરૂરી છે.
- : ૯: શ્રેણી ૫, ૬, ૭ ના સમાજવિદ્યાના અભ્યાસક્રમમાં નિર્દેશક સામગ્રી : illustrative material: નું હાલનું ઠરાવેલું પ્રમાણ પૃષ્ઠસંખ્યાના વીસ ટકા જેટલું છે. તેમાં વધારો કરવાની તેમજ જરૂર જેટલા રંગીન ચિત્રો સમાવવાની વિચારણા કરવી જરૂરી છે.
- : ૧૦: પાઠ્યપુસ્તકના પ્રત્યેક પ્રકરણમાં સમાવેલી માહિતીના મુખ્ય મુદ્દા પ્રકરણને અંતે આપવા આવશ્યક લેખાવા જોઈએ.

PRINCIPLES AND CRITERIA FOR PREPARATION OF TEXT-BOOKS IN SCIENCE (CLASS V)

After discussion regarding the various aspects of textbook preparations the following principles and criteria are developed. They are presented under the following heads:

- A. Content
- B. Illustrations
- C. Exercises and activities
- D. Presentation
- E. General

A. Content:

1. It is assumed that due thought has been given to curricular plan at the time of framing the syllabus of the subject; but it is also desirable that the author acquaints himself with the plan. He then should select the content so as to suit the plan; time and the pages prescribed.
2. Authors should go through the syllabi and textbooks in Science for the lower and the upper classes and should give proper thought to the question of articulating the instructional materials of their book with that of the lower and the higher classes.
3. The authors should carefully go through the objectives of the subject laid down in the syllabus and use them according to the level of the students. This should reflect into the selection of experiments, demonstrations, illustrations and exercises and activities.

4. Percentage weightage for each branch of science to be studied in a particular class should be decided and be made available to the authors. The following weightage may be considered for class V.

Botany-Zoology	35%
Physiology Hygiene	30%
Physics	35%

The relative weightage to be given to each topic in a particular branch may be decided by the authors in advance before starting writing the text.

5. Organization of chapters may be done by authors in a suitable manner according to his plan of presentation but it is essential to do it in advance so as to avoid overlap and repetition in the text.
6. The author should take into consideration the academic background interest, age and environment of pupils. The exercises and activities may be provided for the pupils of all levels.
7. The text material should include experiments and activities which may require effective use of equipment.
8. The author should acquaint himself with the syllabi of other subjects in the same class so that he can better correlate his materials.
9. While giving captions and subcaptions it may be seen that they do not disclose the conclusions which are expected to be outcomes of observations and experiments.

10. References to additional reading materials may be given in Teacher's Handbook for the present but they may be given in the textbook at a later stage.
11. Concepts in the latest forms and contexts should be given.
12. Brief description of demonstrations should be given in the body of the text.
13. A glossary of new terms may be provided at the end of the book.

B. Illustrations

1. Wherever documentary evidence is necessary, photographs should be used. Special instructions should be given to the photographer for a print having a good contrast.
2. It is suggested that line-drawings with the use of variable screens may be used.
3. Only scientific details may be stressed in the diagrams and other illustrations.
4. Wherever portraits are to be given they should be beautifully rendered in line drawings.
5. Reverse drawings (Black background with white outlines) may be adopted, wherever emphasis of that nature is required.
6. Minimum size of the block should be 5 cm x 5 cms. In case where a smaller size is necessary sufficient white space should be kept.

7. Scale of illustration should invariably be given wherever necessary.
8. In Biology the technique of overlays may be used for showing different parts of the diagrams wherever possible.
9. Two colours may be used in illustrations in Biology where it is essentially needed.
10. If possible, flash-out illustrations may be used to provide more space for the illustration.
11. To the extent of 25-30% of the total space may be allotted to illustrations.
12. The contiguity of illustration and its related matter should be maintained.

C. Exercises and activities

- (1) Exercises and activities may be given at the end of each chapter. In addition at the end of each branch consolidated exercises should be given. They should cover all objectives and the whole content.
- (2) Short answer-type questions and varied objective type tests should be included in exercises.
- (3) Activities should aim at satisfying scientific curiosity in pupils through observation, collection and preservation, field trips, further experimentation and preparation of models and charts. This should prepare ground for establishing science clubs.

D. Presentation

1. As the teaching of science, besides giving information, aims at developing various abilities like thinking and reasoning and skills like observation and experimentation the textbook in science should present the material so that it promotes the above mentioned abilities and skills.
2. Presentation of the matter may be such as that the learner may develop interest. This can be achieved by introducing life-situations.
3. Presentation may be as much logical as possible so that it can be used straight away as class-room instructional material where a teacher finds no alternative better plan.
4. New terms, new concepts and principles may be printed in lower bold type to facilitate their presentation by the teacher and assimilation by the pupils.

E. General

1. A preface may be given in a textbook. It should include salient features, specific approaches and acknowledgements.
2. Index of the titles of the chapters with page numbers may be given.

3. It is recommended that

- (a) demi octavo-size should be replaced by a size 16 cm. x 20 cm.
- (b) for increasing the durability of the book it is recommended that central stitching should be replaced by sectional stitching and binding.
- (c) good quality paper should be used.
- (d) 14 point monophase types may be used.
- (e) International numerals should be used.
- (f) the title-page should be so designed that the spirit of the subject may symbolically be reflected.
- (g) Uniformity of page lay-out may be maintained for the series of a book.

4. The final printed books must be available in the market in the last week of April. This may enable the teachers to prepare themselves and pupils to get books at the proper time.

5. The teachers of standards V, VI, VII in primary schools do not have the necessary academic background to put into practice the upgraded syllabus in science. Primary schools also do not have the necessary science teaching equipment to teach the new syllabus. Hence this committee suggests that: (i) Orientation classes for std V teachers should be organised with the help of secondary schools and (ii) a special grant for science equipment should be given to primary schools.

Guidelines for Textbooks writers of Mathematics

The following guidelines have been evolved to help the text-book writers in mathematics for primary classes. They have been developed keeping in view the nature of the subject, the characteristics of the age-group and the psychology of learning. There are only recommendatory and not mandatory. They have been grouped under the following main heads.

- I. Planning of the textbook
- II. Presentation
- III. Editing

I. Planning

- (1) While planning the body of the text-book all the requirements laid down by the prescribing agency may be taken into consideration (e.g. class, number of pages, size of the page, types, point of view etc.).
- (2) Instructional objectives may be **thoroughly** threshed out in advance.
- (3) Topic-wise content analysis may be undertaken in the form of concepts, understandings, principles and processes for developing the content out-line.
- (4) Order of the topics in the table of contents may be in the logical sequence.
- (5) The table of contents of the text-book, wherever necessary, may be spelt out in greater detail keeping in view the extensity and depth of coverage of subject

matter and objectives suited for the grade.

- (6) Decision regarding rough estimate of number and variety of illustrations should also be taken in advance.
- (7) The scheme of exercises to be followed should be planned in advance.
- (8) The type, tables, glossary, instructions for pupils and teachers etc. may also be planned in advance.

II. Presentation

- (1) The instructional material of the subject to be included should be relevant to the syllabus and suitable to the age group.
- (2) Language of presentation should be suitable to the age group. Level of expected manipulative skill should also be in keeping with the age group.
- (3) Each topic may be divided into appropriate sub-units and exposition of each sub unit may be followed by a few questions simple in computation.
- (4) Wherever available standard terminology should be used.
- (5) Style of presentation should be such that it would promote self-learning on the part of pupils.
- (6) Subject matter should be so planned that it would provide training for abstract reasoning and logical thinking which are the main aspects of the nature of mathematics.
- (7) Presentation of the subject-matter should include a variety of motivating devices such as diagrams illustrations, activities etc.

- (8) Generalizations should be developed through inductive process and checked deductively as far as possible.
- (9) Problem solving approach may mainly be utilised for exposition of subject matter.
- (10) Undefined terms and basic axioms should be mentioned wherever necessary.
- (11) Presentation of subject-matter should be correlated with other subjects wherever possible.
- (12) Adequate drillwork may be provided at the end of each topic.
- (13) Review exercises may be provided at suitable places to ensure total learning of related topics.
- (14) Test papers may be provided at two or three convenient stages to ensure the retention of different topics previously learnt.
- (15) Exercises should contain graded examples and a **variety** in the nature of examples should be maintained.
- (16) Situations for examples should be drawn from daily life and community resources.
- (17) Major part of the exercise should be based on **illustrative** examples and a few should be such that original thinking on the part of pupil is required.
- (18) Some examples for oral work should be provided in the exercises.

- (19) Adequate use of diagrams, pictures graph etc. should be made wherever necessary but over use of the same should be avoided.

III. Editing

- (1) The manuscript should be accompanied by all the necessary instructions regarding proper placement of illustrations, arrangement of material, etc.
- (2) Contents of cover page, preface, declaration, table of contents, tables, key, index etc. should be adequately arranged along with the subject-matter.
- (3) Chapter numbers, titles, captions, sub-captions, numbering the paragraphs, checking the keys, cross references and references to illustrations etc. should be carefully scrutinized and set in order.

Proceedings of the workshop on 'Developing Principles and Criteria for the preparation and review of Text Books' held on 11th August to 14th August 1969.

Introduction:

The workshop was attended by 49 participants who hailed from all parts of Gujarat State.

Inaugural Function:

The Inaugural function was held on 11th August 1969 at 11-30 a.m. Dr. C.S. Patel, Vice-Chancellor, M.S. University of Baroda inaugurated the workshop. In the course of his inaugural address, Dr. Patel pointed out the need for an all out programme to improve school education. He observed that while teacher training was important, there was need to lay greater stress on developing good instructional materials. Textbooks constituted the most important of instructional materials for pupils. He was happy that the State Government has decided to produce textbooks. He paid tributes to the N.C.E.R.T. for developing a national programme for the improvement of textbooks. Dr. Patel appreciated the initiative taken by the Centre of Advanced Study in Education to organise this type of workshop and the steps taken by the Directorate of Education to provide guide lines to the textbook writers.

Earlier, Dr. D.M. Desai, Dean of the Faculty of Education and Psychology while welcoming the participants observed that the participants may consider some of the National issues like (i) National Integration (ii) Development of Moral and Spiritual values & (iii) Population Education while developing

the criteria for text books.

Dr. M.B. Buch, Head, C.A.S.E., explained the purpose of the workshop and Dr. R.H. Dave gave a detailed idea of the complexity of problems involved in the preparation of good text books and the programme of NCERT to meet these problems.

Dr. B.P. Lulla, Reader, C.A.S.E., Faculty of Education & Psychology, moved the vote of thanks.

Work Session

The participants worked in four subject groups viz. Mathematics, Science, Social Studies, Languages (Hindi & Gujarati). Each group was assisted by N.I.E. consultants and Resource Personnel. On the 14th of August, the groups presented their reports in the general meeting. The reports were discussed in detail and suggestions incorporated.

The participants had the good fortune of meeting the State Education Minister Hon. Shri Gordhandas Chokhawala on 13th August. Hon. Minister addressed the participants on the need for better textbooks for schools.

During the course of four days, the participants enjoyed meeting the staff members of the Faculty of Education and Psychology. The Faculty organised a recreational evening for the participants on 12th August, 1969.

Gujarat State Education Minister's Address
to the participants

Hon. Minister for Education Shri Gordhandas Chokhawala met the participants of the Workshop on 13th August, 1969.

In the course of his address, he observed,

"I appreciate this attempt to organise the workshop under the joint auspices of the Directorate of Education of the Gujarat State, Centre of Advanced Study in Education, M.S. University of Baroda and Department of Textbooks of the National Council of Educational Research and Training. It is indeed praiseworthy that a good number of Teachers, Principals and the Writers of the Textbooks have tried to make it a success."

.....The nationalisation of textbooks would not affect many because very few textbooks used to be sanctioned. It is quite necessary to keep a check on the quality of book production as it vitally affects the planned approach to school improvement. It is therefore desirable that the teachers who are conversant with child psychology should be in charge of writing the books.

Research in curriculum is very important and I believe that it is a continuous process which requires some machinery at the state level which can continuously improve the curriculum. It is only through continuous effort that the

State Government can provide a good and useful curriculum. Curriculum is of vital importance in life. It should be objective-oriented and community-oriented. It should be such that after completing the same, the student would be able to solve the problems of life. The curriculum as it is today, is not adequate from this view point.

As regards women's education, there should be different curricula so that they could be better housewives. Moral education, concept of national integration, and secularism are some of the factors which should be reflected in curricula. I attach special importance to keeping language of the book simple and understandable. The author should take this as love of labour and try to bring up the standards of education. The State Government is thinking to plan seminars on different aspects of text-book writing."

પાઠ્ય પુસ્તક - વિચારણા કાર્યશિબિર : વડોદરા.તા.૧૧થી૧૪-૮-૬૬
કાર્યશિબિરના સર્વસામાન્ય સૂચનો.

૧. શ્રેણી ૧-૨-૩ માં પણ બધા વિષયના પાઠ્યપુસ્તકો હોવાં જોઈએ.
૨. શ્રેણી ૧ થી ૭ સુધીના બધા વિદ્યાર્થીઓ માટે અધ્યયન-કાર્યપોથી (work-book) હોવી જોઈએ.
૩. દરેક પાઠ્યપુસ્તકની શિક્ષકો માટેની પુસ્તક નિદર્શની (hand-book) હોવી જોઈએ અને એ નિદર્શની પુસ્તકના લેખકે લખવી જોઈએ.
૪. અભ્યાસક્રમ (syllabus) અને તદાધારિત પાઠ્યપુસ્તક અમલી બને ત્યારથી જ, અભ્યાસક્રમ તેમજ પાઠ્યપુસ્તકના પુનરવલોકનની ક્રિયા શરૂ થવી જોઈએ, અને એને આધારે દર વર્ષે તે તે પાઠ્યપુસ્તકનું સંસ્કરણ થવું જોઈએ.
૫. અભ્યાસક્રમ અને પાઠ્યપુસ્તકના પુનરવલોકનની સાથે સાથે જ, સમગ્ર શિક્ષણ કાર્યક્રમનું (curriculum) સંશોધનની કાર્યવાહી પણ શરૂ થવી જોઈએ. અને એને આધારે દર પાંચ વર્ષે અભ્યાસક્રમની પુનર્વિચારણા થવી જોઈએ.
૬. આ પ્રકારની પુનર્વિચારણા તેમજ સંશોધન માટે રાજ્ય સરકારે એક સ્વાયત્ત પાઠ્યપુસ્તક સંશોધન કેન્દ્રની (Text-book Research Bureau) સ્થાપના કરવી જોઈએ. આ સંશોધન કેન્દ્ર જ પાઠ્યપુસ્તકોની સમીક્ષા અને ચકાસણી કરે.
- પરંતુ આ સંશોધન કેન્દ્ર અસ્તિત્વમાં આવે ત્યાં સુધી પુસ્તક સમીક્ષાનું કામ નીચે દર્શાવેલી ત્રણ કક્ષાએ થવું જોઈએ. : ૧: વિષયના નિષ્ણાત-ઠ્ઠારા, : ૨: અધ્યાપનકળાના નિષ્ણાત ઠ્ઠારા, અને : ૩: તે તે કક્ષાએ કામ કરતા શિક્ષણના અનુભવી ઠ્ઠારા.
૭. આજના નવા અભ્યાસક્રમને આધારે લખાયેલાં શ્રેણી ૧ થી ૪ માટેના જે જે પાઠ્યપુસ્તકો ગહાર પડ્યાં છે, તે તે સર્વ પુસ્તકોનું આજથી શરૂ

કતી બે વર્ષની સતત અજમાયશને (try-out) ને અન્તે, ફીજે વર્ષ એમાંથી સુખિત, સંયોગીકરણ કરીને, વિષયગત નવા પાઠ્યપુસ્તકોનું નિર્માણ થઈ જોઈએ, અને આ પુસ્તકો જન ૧૯૭૨ થી શિક્ષણમાં અમલી બનવા જોઈએ.

૮. પાઠ્યપુસ્તકમાં ચિત્ર, આકૃતિ આદિના કદ, પ્રમાણની ઉપયોગિતાને લક્ષમાં લેતાં, પાઠ્યપુસ્તકોની પૃષ્ઠ-સંખ્યામાં ૨૦ ટકા સુધીના વધારાને છૂટ મળવી જોઈએ.

૯. કેટલાક વિષયોમાં અને સવિશેષ ગુજરાતીમાં અભ્યાસક્રમની તરાહનું સાતત્ય સંચવાયું નથી. આ તરાહ ખંડિત થઈ છે. આ કારણે શ્રેણી ૧ થી ૪ સુધીના પાઠ્યપુસ્તકોની રચનામાં અભ્યાસક્રમ આધારિત જે તરાહ અપનાવવામાં આવી છે, તે તરાહ શ્રેણી ૫ થી ૭ સુધીના પાઠ્યપુસ્તકોની રચનામાં ખંડિત થશે. આ સાતત્યખંડનને નિવારવા રાજ્ય સરકારે શ્રેણી ૫, ૬, ૭ ના અભ્યાસક્રમની તરાહની પુનર્વિચારણા અને પુનર્રચના માટે અધ્યાપનકળાના નિષ્ણાતોની એક સમિતિની રચના કરવી જોઈએ.

૧૦. સમાજવિદ્યા એ ઇતિહાસ, ભૂગોળ અને નાગરિકશાસ્ત્ર એમ ત્રણ વિષયોનો સંયોજિત વિષય છે. તેમ છતાં એ વિષય વિયોજિત પદ્ધતિએ અને અલગઅલગ પાઠ્યપુસ્તકો વડારા શીખવાય છે. એમ થતાં એ વિષયોનું સાચું સંચવાયું નથી. આ હકીકતને લક્ષમાં લેતાં આ શિબિર એવી અભિપ્રાય દર્શાવે છે કે ક્યાં તો :૧: આ વિષયોનું સંબંધાત્મક રીતે સંયોજિત ગ્રંથન થઈ જોઈએ, અથવા તો :૨: વિભાજિત વિષયો તરીકે એમને અંકિત કરવા જોઈએ.

૧૧. આ શિબિરમાં પાઠ્યપુસ્તકોની રચનાને લગતી કેટલીક તલસ્પર્શી અને ઉપર્યુક્ત વિચારણા થઈ છે. એ વિચારણાને અન્તે કેટલીક ઉપયોગી માર્ગદર્શક તારણો તારવવામાં આવ્યાં છે. પાઠ્યપુસ્તકોની રચના

- માટે પ્રવૃત્ત થયેલા લેખકોને, રાજ્ય સરકાર આ તારણો અતિ વહેલી તકે મોકલાવી આપવાનો પ્રયત્ન કરશે એવી આ શિથિર અપેક્ષા રાખે છે.
૧૨. શ્રેણી ૬ અને ૭ ના પાઠ્યપુસ્તકોની રચના માટે જ્યારે રાજ્ય સરકાર લેખકોને નિમત્રે ત્યારે તેને તે લેખકોને પુસ્તક રચના માટેના વિગતવાર મનર્ગદર્શક સૂચનો મળી જાય એવી વ્યવસ્થા ગોઠવશે, એવી આ શિથિર અપેક્ષા રાખે છે.
૧૩. આ નકાર્ય શિથિરમાં શરૂ થયેલી ઉપયોગી વિચારણાના અધૂરા રહેલા તત્ત્વને આગળ કપાત્તવવા માટે રાજ્ય સરકાર આ પ્રકારની અન્ય નકાર્ય શિથિર યોજશે એવી અમે વિનંત્ર અપેક્ષા રાખીએ છીએ.
૧૪. જહુદી જહુદી ભાષાઓમાં એક જ વિષયના બધા પાઠ્યપુસ્તકોમાં એકસરખી પરિભાષા (terminology) વપરાવી જોઈએ, એ કઠિન એ પરિભાષાના સંયોગીકરણ માટેની વ્યવસ્થા ઉભી કરવી જરૂરી છે.
૧૫. આજના શ્રેણી ૪ થીના ગણિત અને વિજ્ઞાનના પાઠ્યપુસ્તકોમાં ક્ષેત્રફળની બાબત બેવડાઈ ગઈ છે. આ પુસ્તકોમાંથી આ પ્રકારનું આવર્તન (duplication) દૂર થાય એ માટે રાજ્ય સરકારે અભ્યાસક્રમ સમીક્ષક સમિતિની રચના થવી જોઈએ.
૧૬. થોડા પાઠ્યપુસ્તકોમાં રજૂ થયેલી કેટલીક જુની પુરાણી અને આજે અસંગત બનેલી માહિતીએ પુસ્તકોમાંથી દૂર થવી જોઈએ, અને એને ઠેકાણે નવી સંગત માહિતી ઉમેરાવી જોઈએ.
૧૭. પાઠ્યપુસ્તકો બજારમાં એપ્રિલના મધ્યમાં ઉપલબ્ધ થવા જોઈએ કે જેથી ઉદાળાની રજાઓ દરમિયાન તે તે વિષયના શિક્ષકને પોતાના વિષયમાં પૂર્વ તૈયારીની સુવિધા મળી રહે.
૧૮. શ્રેણી ૫, ૬, ૭, માં વિજ્ઞાનનો નવો અભ્યાસક્રમ આવ્યો છે. આ અભ્યાસક્રમમાં વિજ્ઞાનના શિક્ષણની જે અપેક્ષા રાખવામાં આવી છે તે અપેક્ષાને પરિપૂર્ણ કરનારો તાલીમ પામેલો શિક્ષકગણ આજે આપણી પાસે નથી. આ પ્રશ્નને હલ કરવા માટે એ શ્રેણીના વિજ્ઞાન શિક્ષકોને

જરૂરી માહિતગારીથી તેમજ તાલિમી દ્રષ્ટિએ સજ્જ કરવા માટે

વિજ્ઞાનના ચોપ વર્ગોનું આયોજન કરવું આવશ્યક બને છે.

વળી આ કક્ષાએ પ્રાથમિક શાળાઓ પાસે વિજ્ઞાનનસ જરૂરી સાધનોનો

અભાવ છે. આ અભાવને હળવો કરવા માટે રાજ્ય સરકારે આવી

શાળાઓને વિજ્ઞાનના સાધનો મળી રહે એવી કોઈક ખાસ પ્રકારની

અનુદાનની જોગવાઈ કરવી જરૂરી બનશે.

સમાપન

આપણી શિક્ષણ વ્યવસ્થાના નવનિર્માણનો આ સંક્રાન્તિકાળ છે. આ પ્રકારની સંક્રાન્તિનું નિર્માણ કરીને રાજ્ય સરકારે અને સવિશેષ માનનીય કેળવણી પ્રધાને એક ચોખ્ખું દિશાનું હિમતભર્યું પગલું ભર્યું છે. આ શિબિર સરકારના આ પગલાને આવકારે છે, અને એની સફળતા માટે પોતાના સર્વદેશીય સહકારની ખાત્રી આપે છે.

વળી આ શિબિર માને છે કે સરકારનું આ પગલું એના રૂઢ અર્થમાં રાજીયકરણ નહીં, પણ શિક્ષણ સંસ્કરણના કેટલાંક ઉત્તમ તત્વોનું સંયોગીકરણ છે. સંયોગીકરણની આ અસિનવ પ્રધ્યતિથી તૈયાર થનારાં આપણાં પાઠ્યપુસ્તકો આપણા શિક્ષણ ક્ષેત્રનું એક અગત્યનું પ્રસ્થાન બની રહેશે એની અમને પૂરી શ્રદ્ધા છે.

BASIC PRINCIPLES OF WRITING TEXTBOOKS IN MOTHER TONGUE

Generally a writer of textbooks in mother tongue has two points in his mind-one, the contents or the subject matter to be included in the books and the other, method of teaching. this he has a subjective attitude because he gives preference the method with which he himself started reading and to the contents, he read in the readers in his school days. But this attitude requires to be changed and to yield in an enlightened approach to the development of readers.

Writing textbooks in mother tongue is a complicated task, because it is through these books that we aim at bringing whole some change on national levels. We aim at bringing a desirable change in the attitude of our young readers. We want them to become good and enlightened citizens. We want them to reach the destination of our national goals. It is therefore these textbooks in which we will have to keep the child, for whom they are meant, in view. They are the real gods for whom we are preparing the 'Havish'. They are not simply to read the textbooks for a programme of learning a particular language, though that is also important, but they are to read them for making their lives better and sublime so that they may be able to play their role in the reconstruction of the country and serve the human race.

We are now a free nation. Our young readers, therefore, are not simply to become literates and learn reading by simply saying the words. Real reading is some thing else. It is

applying into one's life the knowledge that he has gained through reading. 'Manusmrite' also supports this:

अज्ञेयो ज्ञेयानः प्रेष्टाः , ज्ञेयस्य परेणो वराः
वरिष्ठो ज्ञेयः प्रेष्टाः , ज्ञेयस्य वाक्यस्येनः

It means that those who are literates, they are better than the illiterates: those who can retain the matter read, are better than who are simply literates: Those, who can wisely interpret what ever they have read, are better than those who can simply retain it, and, those who can use in life what ever they have retained after carefully interpreting and rationally judging are surely best of all.

So, this is to be kept well in view while preparing the textbooks in mother tongue, because even if one of these elements of reading is lost, it becomes a meaningless thing. If a reader only finds out what the author has said but does not think what he meant by it, the reader is no better than a parrot. If he reads without understanding and thinking what the author means, he is getting nothing out of it, except practice in seeing and speaking letters and words. He will then quickly forget what he does not understand, whereas he could have used his time in a better way. If the reader reads without thinking about the utility of ideas to him, he may readily forget them which otherwise could make his life richer and more useful. Therefore, real reading is recognising the words, speaking the understanding their meaning and then understanding the sentences.

and the para, interpreting and judging the meaning thereof and then assimilating the ideas worth adopting in one's life. The definition of reading is to guide a writer in writing, collecting and compiling the content material for a textbook in mother tongue.

Another point to remember is that the mother tongue is not only a language but also a medium of instruction and a very important tool in the total programme of teaching in the school. Keeping this in view the following factors are to be kept in view while preparing suitable textbooks in mother tongue.

1. Language:

It is very essential to have a complete description of the language in which the textbook is being prepared as this has immense implications both for the method adopted in teaching reading, writing and speaking and for the preparation of instructional material. The author is required to have a thorough knowledge of the phonetics and structure of the language. He should know well the peculiarity of the language because this peculiarity becomes the important point of teaching. The spoken word in a language consists of characteristic sound units which present special speech - learning problems. Similarly, the spoken sentences in a language have characteristic structures and sequences which affect both oral and silent reading. Greater attention therefore, needs to be paid on the part of the author to children's oral language in planning a reader and the related materials for them.

2. Children:

Since this is for the children that the textbooks are written, the areas of their interest, therefore, are necessarily to be kept in view. Children learn to read more easily if the material is meaningful to them and they are interested in the ideas and/or the way the ideas are presented to them. Therefore, books which deal with the ideas familiar and interesting to children will prove more successful teaching tools than those otherwise.

Childrens' interest are determined partly by the environment and partly by biological needs as children mature. A six year old child has different interest from those of an eight or ten years old. Sex, age and capability of the children and socie-economic status, culture and the educational level of the parents strongly influence the interests of children. But it does not mean that the author does not go beyond the interest area of the children. For example, the children of class five may not be interested in the space at the space-flight while the topic is of paramount importance looking to the needs of the present age. So a good author would like to include the topic, but it should be presented in an interesting style, so that the required information may enchant the child. Good illustrations also, particularly in the lower classes, sustain the interest of the children. They like to have a beautiful book in their hands. A good book is good and rich both in contents and set up.

3. Modern methods of teaching the language:

The textbook is to be based on a suitable method for teaching language. A combination of methods should be preferred to the exclusive use of one method, so that the deficiencies of one approach may be offset by the strengths of others. The method that provides more opportunities for 'self learning' to the children, is the best method. The textbooks should be designed to develop independent learning habits in the children. The author should plan the textbook in a way in which more opportunities are given to the children for immediate application of the knowledge gained through the contents of the textbooks. Children should be helped to discover a fact about reading rather than being told that fact. They are not to be spoon fed. A lot can be left for their imagination and independent thinking. This will make their reading more useful and purposeful.

5. Role of language teaching in relation to the total programme:

Mother tongue is not only a language, but also a medium. So, the children should develop essential language abilities to enable them to understand quickly what they read and also to express themselves clearly. It is quite obvious that if the child has not that mastery over language, he is a complete failure in his educational pursuits. More he understands the language, better he will learn other subjects like social studies, History

Geography, Economics etc. As a matter of fact teaching of various subjects in the total school programme is the teaching of language, because as you teach the language of literature, similarly you teach the language of other subjects. The importance of teaching mother tongue is, therefore, to be realised if we aim at better education and at not allowing too many drop-outs, wastage and stagnation. How then a textbook writer can help in this regard? As a matter of fact it very much depends upon him what plans does he make for the development of various skills of language in the child, and what efforts does he make to incorporate various topics to enrich the knowledge of the children and in what style, so that the child may learn other subjects easily and in an interesting way.

6. Principles of learning

The children learn most readily when:

- (1) they understand the organisation of their work.
For example, a sentence is an organisation of words which the child has heard and used in his speech, and, the child speaks a sentence or a word in the sense of a sentence and not a jumble letter;
- (2) they can associate the unknown with some thing known. For example, if the child sees a picture, he can sometimes determine the identity of a new

word on a page among known words. If more than one word is new, his job becomes either more difficult or impossible.

- (3) they are informed immediately whether or not they are right in their response, and corrected if required.
- (4) they are helped to discover a fact about reading rather than being told the fact, because if he is only told, he may forget or remember with less assurance.
- (5) they know the meaning of what they are learning. For example, it is easier to learn the forms of words meaningful for them than to learn the forms of invented or quite new words which have no meaning for them.
- (6) rote learning follows discovery of a fact about reading.
- (7) they learn a method of learning in general for themselves as well as the particular fact.
- (8) what they learn has many immediate applications, because delayed application or little application means loss of learning.
- (9) one learning is built upon another rather than being completely unrelated. The first thing learnt is reinforced as it is used in learning the second thing.
- (10) They are encouraged to analyse wholes into parts and to build wholes from parts.
- (11) Sound, form and meaning are of deserving attention at all stages of reading development.

These principles of learning are to be taken into consideration while preparing textbooks and exercises on various lessons. This will make the teaching of language purposeful and effective.

7. Value : ideational contents :

It is of vital importance that the ideas incorporated in the reader designed for children should reflect the ideals of that nation. This is essential to build the national character of the children. But it is a problem to determine these ideals, because various peoples of a country may have various sets of values and principles by which they live. But this much is quite clear that we should educate our children to understand that they have certain duties and certain rights; that in their dealing with other people they must be sincere, honest, tolerant and able to adjust to new conditions; and that they must develop a scientific and healthy attitude towards life. They should be resourceful, ambitious, hard working and have a challenging objective. They should develop an attitude of cooperating and sharing with others, feeling responsibility for the welfare of others, respecting parents and elders and respecting law and dignity of labour.

This all should reflect in the contents of the readers. Some more ideational contents for the readers are :

- mutual understanding and trust
- cooperative effort for effecting change in pattern of living
- accepting responsibility to one's group
- dedication to the preservation of freedom
- care of personal and public property and national resources
- respect for people of varied religions and culture
- courage, fearlessness and resourcefulness

contd.,...

These values and ideas are to be incorporated in various lessons of the readers in such a way that they may bring desirable change in the attitude and behaviour of our children. One very important thing in this connection is to be remembered that in establishing one value the another should take care that he is not killing the other and important values. But it does not mean that conflicting situations are to be completely avoided. Moreover, these situations will clarify the values-their strength and weakness-clearly. Some of our classics, such as stories from Panch Tantra, are to be carefully analysed with this point of view. It may also be remembered that ~~old order~~ ^{old order} yielding place to new: lest one good custom should corrupt the whole world.' Some of the classics have lost their values with reference to the present needs and situations. They require careful twisting.

8. Vocabulary

Familiar words and concepts help the child to understand the lesson and build his own language. Therefore, utmost care is to be taken to select the words for the lessons of a reader. It would be wise to collect spoken vocabulary of the children of each grade or age-group and build lessons with them. Various devices of word-formation may be used in the exercises of each lesson, so that new words may be taught before they are used in the textbooks.

Languages belonging to Indo-European group are very much influenced by Sanskrit as regards the vocabulary is concerned. Every such language has a number of 'Tatsam' words frequently used in speech and writing. These words have their own discipline as regards the formation of new words is concerned. By adding prefixes or suffixes or by joining

or disjoining many such new words are formed. The author is free to use these words according to the standard of the children. But if more and more words of a particular language are used in the textbooks, it would be a healthier sign. The dialects are also to be given a proper place in the texts provided they are widely recognised by the children. These dialects feed the main language and make it richer day by day.

We humbly suggest to have a control on the use of the vocabulary. Lesser the number of words and that too with many repetitions, better it is for the child to read with speed and understanding. The new words are learned in the setting of old words. If a child sees some words often enough, he will look at them as wholes and develop a quicker recognition of them.

Another idea behind the controlled vocabulary is that reading skills - like other skills - are learned when every thing except the new learning is familiar and therefore easy for the learner. By using controlled vocabulary, attention can be concentrated on the techniques being learned and skills pertaining to reading being developed in a smooth way. Lesser the number of words, more opportunity for developing word-study and comprehension skills. Those, who are critical of controlled vocabulary, ^{forget this important aspect.} Text books designed with this discipline, ^{will make it possible to teach the various skills of} reading and language with a minimum of obstacles for the learner.

Another thing of vital importance regarding vocabulary to be used in a reader is that efforts are to be made to include the vocabulary of the corresponding books of Social Studies, Science and other school subjects. This will make the understanding of the children wider.

He will learn these subjects quickly if this coordination is established. Concepts will be clear to him. Better he understands the subject matter, better his expression will be. The standard of language of the textbooks of different subjects for a class should be more or less the same.

9. Organisation of the Material :

Another decision, the author must make, is the organisation of materials within the book and from book to book if this is a series. The contents may be organised in various units pertaining to various themes according to the interest area of the children of a particular age group. Organisation in Units makes it possible to pursue a topic in depth, to provide repetition of words and to relate the contents of the book to some of the social studies and science learnings of the curriculum of that standard.

The author has to determine the variety of topics within the book. They may be presented in various styles of literature, viz, stories, essays, dramas, poems, biography, autobiography, letter, diary etc. Some of the topics may be relating to social studies, science, humour, classics, folk tales, children's problems and activities. If it is a series for primary classes, from one to five, themes of the readers for respective classes may be; around the home and school, around the immediate neighbourhood in the village or in city, around the state, about the country and about the world. Poems may be given due place. They should be well rhymed and full of music, may be descriptive and not abstract and should be composed in simpler words carefully selected for developing taste and love for poetry. The author should keep in mind that he does not leave a wide gulf between the standards of language of books for different classes

Religion and politics being very touchy problems should be avoided as far as possible. But it does not mean that good teachings of various religions are to be avoided. More stress is to be given on promoting common brotherhood, fellow feeling and human values supported by all religions. To promote national integrity some careful planning is needed. The author may give descriptions of festivals of the country, biographic sketches of the great men and women who dedicated their lives for the uplift of the nation and description of the places of beauty and of historical importance in the country. Short introduction of the peoples, animals and birds and literature of the country will also promote the national integration.

10. Skills: word-study and comprehension :

As our emphasis is on reading with understanding, the author should plan for the development of various reading skills through various exercises at the end of each lesson and each unit. The exercises are to be planned in such a way that they provide a sequential development of language: how new words are formed, how phrases are to be introduced and with what purpose, how new patterns of sentences are to be given and analysed and how various idioms and proverbs are to be introduced to beautify the expression and make it more effective. Gradation of difficulty in developing various skills is always to be kept in view while drafting exercises. Another quality of the exercises is their presentation. They should be presented in such a way that the children think for themselves, draw their own conclusions and inferences and do not wait for some one else to do the thinking for them. Questions of 'yes' or 'no' answers will do no good if they are not followed by 'why' to make the child to

think about the rational of their answer. We would like to make them think critically. In addition to exercises for developing the desirable language skills, the author is advised to put in the book the learning activities which we fear the teachers would otherwise skip and which we feel most important for children of a democratic nation. It is also feared that unless children were taught to use their own heads even in learning the smallest thing, they might never be encouraged to develop the habit of thinking for themselves and having confidence to express to support their thinking. Our textbooks have to be designed for a country whose emphasis has been ^{on} established practices and whose need for survival is change, re-appraisal, adaptability to change, creative and courageous thinking by the common man as well as by the leaders.

11. Evaluation

Tests may also be given at the end of each book. Desirably they are diagnostic, so that the teacher can see in which areas the child is weak and in which areas the teacher's programme has been a failure and what programme he should now make to help the individual. For testing the development of the child in word-study-skills, tests, pertaining to word-recognition, word-meaning, number, gender, compounds, Sandhis, Word-formation, synonyms, antonyms, one word substitutes etc., may be framed. For comprehension, the author may frame tests on story-recall, selection of the main idea, critical thinking, drawing conclusion, judging, predicting outcomes, inferring, discarding the irrelevant, interpreting a thing in other words, summarising and so on and so forth.

These tests are not to be given to the children only at the end of the session. They may be used as sample to be given during the session,

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preferably at the end of each unit so that the teacher may know where he and the children stand and they may have enough time for remedial work.

12. Glossary

The last page may contain (as in Gujarati readers) a listing of all the new words and the page number of their appearances if possible. This can be given lesson-wise also. But such a list is a must. It will help the teacher and the child both. If it is a series, a new word is that which has not occurred in the previous books. Such a list can also be used for arranging it alphabetically to teach the children to use the dictionary.

13. Illustrations

Illustrations are parts and parcels of a textbook as they sometimes reveal what the author could not say in the book or help the child to understand the situation described in the book or sometimes they clarify a concept. The number of illustrations may be reduced as and when the child develops language. These may be given in different positions at the top, at the bottom, towards left or right or spreading over two pages if the need be. The only restriction is that they should avoid registration and not interfere with a clear image of the printing words. For this all, the author is to prepare complete details for the artist. The artist should be asked to show the sketches and get them approved by the author who may then see them with the point of view how they help the child to understand the text. He may, perhaps, not be a best judge of the illustrations with other points of view-designing, colouring, featuring etc., which should be left for the experts.

14. Manuals and workbooks :

As recommended by the National Board of School Textbooks supplementary instructional materials like teachers' handbooks and pupils' workbooks may also be produced treating this as an integral part of the textbooks programme. Teachers' guide may include philosophy and method, of teaching language and the detailed lesson plans for each lesson. The teaching points in a lesson should be high lighted in the guide for teachers. Its language should be simple as far as possible so that it may be understood by the common teachers. It may include exercises for practice that could not find place in the textbook for paucity of place. Though every thing regarding the teaching of a lesson cannot be given in a guide for teachers and still much is left for the teachers to do themselves, but efforts should be made to make such a guide as useful as it is possible. It may contain the lessons of the textbooks also so as to help the teacher to handle only one book at a time. These pages can be given in the beginning, in the end or interleaved with respective lesson plans. Teachers editions of the NCERT Textbooks may be seen as samples.

Pupils' workbooks should help the children to enforce and increase their learning of the textbooks. They give them practice in writing also. Exercises of the type which require the answers in writing, ticking, matching, left out of the textbooks, are given in the pupils' workbooks. These exercises should be planned with a definite system and purpose and should be based on the respective lessons. Time, purpose and instruction for teachers or children may also be given for each exercise to make itself explanatory. Exercises for

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creative drawing may also be given.

In the end, it will not be out of place to throw an idea to the authors. Since pupils' workbook is an extra burden on the parents, what good if it forms a part of the textbook itself with a slight addition in the price. This will give more opportunity to the child for practising what he has learnt. One more idea is that if in the beginning of each lesson, something about the theme of that lesson is given to read to the children, they may be benefitted in the sense that the children will have an idea, in advance, of what they are going to read in the lesson. This will be an additional effort in the direction of making the children to learn by themselves and making the textbooks more effective and useful.

PREPARATION OF HINDI TEXTBOOKS
FOR TEACHING
HINDI AS A SECOND LANGUAGE

Language is a system of sub-systems, a system of hierarchies, or even a hierarchy of systems. It is a very complex phenomenon created by the equally complex human mind. In spite of its complexity the mother tongue is naturally and hence easily learnt by a native child, and it does not need any extra-intelligence on the part of the child, though the intricacies and niceties of the content in language and literature both prescribe the need for formal orientation of the native speakers also. Different from the mother tongue the problem of a second language learning stands unique in the sense as to what and how much of the system and sub-systems, viz., phonology, graphics, grammar, vocabulary and semantics should be learnt by a learner, which may satisfy the different purposes, viz., social, cultural or educational. Educational purpose covers, of course, partly the social and cultural purposes also.

Hindi is being taught as a second language in India and abroad also. Different persons and agencies have made efforts to select what and how much of its system and sub-systems should be taught and also to suggest how it should be taught to a non-native speaker. The deficiency in most of the courses so far developed and the textbooks based on them is that different purposes, viz., travel, cultural and educational are amalgamated into one and secondly no model or rationalised criteria is used for the selection of the material and organisation of the course. Just on the basis of certain assumptions on the part of the writers and

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editors the courses and the textbooks are prepared. The question 'why this and why this not' was either not raised or if raised, was not adequately answered as it was the personal feeling of the writer or editor which prevailed over the formal criteria and reliable procedures.

Time is ripe when efforts should be made to build up a more valid and rationalised course in Hindi as a second language by :

- a) defining the purpose
- b) adopting some scientific procedures
- c) building up the criteria
- d) following the relevant statistical procedures

Once such a course is developed it will not be difficult to prepare the textbooks based upon that.

PURPOSE

a) The purpose is to be interpreted in terms of objectives, which are to be defined in terms of the expected behavioural changes in the learners after undergoing the course.

PROCEDURE

b, c, d)

The procedure including the criteria and relevant statistical procedures for developing a course in Hindi as a second language includes the following steps :

- (A) Selection
- (B) Gradation
- (C) Presentation
- (D) Repetition

contd....

Again, (A) i.e. selection implies the development of a course, while the rest three are concerned with actual preparation of the textbooks. Thus the programme may include two major steps :

- 1) Developing a course
- 2) Preparing the textbooks

1. Developing a Course

(A) Selection :- Selection gives reply to the question of what and how much. It needs the consideration of the following points :

- (i) Purpose, level and duration of the course.
- (ii) Choice of type, viz., dialect, register, style and media depending upon the purpose.
- (iii) Choice of amount of material depending upon :-
 - (a) External factors, viz. purpose, level and duration, and type as mentioned above.
 - (b) internal factors, viz., number, composability, information, probability, combinability and structuring.
- (iv) Choice of criteria for the selection of the content considering
 - (a) the frequency, including what and how much
 - (b) the range of the items
 - (c) the availability of the items
 - (d) the coverage of the items, including inclusion, extension, combination and definition.
 - (e) the learnability of the items, including similarity, clarity, brevity, regularity and learning load.
- (v) Choice of items covering
 - (a) Phonetic selection
 - (b) Grammatical selection, including structures, inflections concord and structure words etc.

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- (c) Vocabulary selection including concrete nouns, abstract nouns, modifiers and verbs etc.
- (d) Semantic selection, including lexical meanings and structural meanings.

The selection of the type and the media is to be made for the following different stages of the four basic language skills :

- 1. Listening :
 - (a) Auditory recognition
 - (b) Auditory comprehension
- 2. Speaking :
 - (a) Pronunciation
 - (b) Oral expression
- 3. Reading :
 - (a) Visual recognition
 - (b) Reading comprehension
- 4. Writing :
 - (a) Graphics
 - (b) Spelling
 - (c) Composition.

2. Preparing the Textbooks

(B) Gradation :- Gradation answers the questions; What goes with what? What comes before what? If a language is a system and not a list of words or a collection of forms it matters a great deal. The material, being a language, is both system and structure. Hence in respect of system and structure both, gradation needs the consideration of the following points :

- (a) Grouping, including grouping in the system and structure.
- (b) Sequence, including sequence in the system and structure.

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(b) Presentation : Presentation means communicating something to somebody. The most carefully graded selection of a language is useless unless it gets into the minds of the learners. Presentation implies the consideration of the following points :

1. The language skills and their level to be emphasised based upon the purpose, e.g. in India in the case of English reading is to be emphasised, while in the case of Hindi listening and speaking are to be emphasised.
2. The approach to be adopted, viz. Oral (habit skill approach), grammar and translation (rule governed behaviour approach) and method viz. the sentence, word and alphabet methods to be followed for different aspects of the basic skills already mentioned under the title selection. e.g. sentence method may be followed for oral expression, word method for visual recognition of the script and the alphabet method for graphics. For teaching and learning purposes it is essential to discriminate the basic language skills and their sub-aspects as there is no mysterious transfer effects across different language skills.
3. Forms of presentation, viz. textbooks, supplementary books, workbooks and review exercises based on their respective uses. The textbooks may include the material necessary for making the preparation of classroom learning and the learning through individual reading, and the work books should emphasise trouble spots so as to fix them well in the minds of the learner.

The review exercises should not only help in recapitulating but should also establish sequential connection between textbook and supplementary readers and the workbooks.

Further, learning should gradually advance through all these.

4. Coordination, viz. horizontal coordination with other subjects, specially the mother tongue of the learner at that stage and the vertical coordination, which will be taken care of under gradation also.

5. Deciding number, order and spacing of stages and units.

6. Deciding the type of content, which may be

(a) differential procedures, including explanation and translation through mother tongue.

(b) ostensive procedures, including objects, actions and situation.

(c) pictorial procedures according to type of media

(d) contextual procedures including definition, enumeration, substitution, metaphor, opposition and multiple context.

(D) Repetition : Language is mainly a matter of interrelated habits, if it were not, it could not be used as it is. A habit is not established by one or two performances but by many. Only then, one can use the language accurately, fluently and independently.

The problem is to obtain the maximum amount of repetition with the minimum of mistakes. Preventing mistakes is better than correcting them. Mistakes may be prevented in the design /orderly gradation and clear presentation where the selection of the course through careful selection is small enough to control, and productive enough to use, the gradation, gradual enough to be absorbed and systematic enough to avoid confusion,

the presentation clear enough to be understood and varied enough to be interesting. This makes for accuracy of repetition.

Fluency and independence of use, however, are matters of frequency and variety of repetition. There are many varieties of repetition, e.g. rate, incremental, variational and operational. Another point to be considered is the media of repetition. One type or media is more suited to one language skill than to others.

SOME BASIC CONSIDERATIONS FOR DEVELOPING SOCIAL STUDIES TEXTBOOKS

The school is an important institution within society. It has to discharge its responsibility in the context of the purposes that the society desires to fulfil through the school. One of our national goal is the establishment of a vital democracy through the development of enlightened and responsible citizens having an abiding faith in democratic principles and processess. The school has an important role to play in the achievement of this aim. Social Studies shoulders, undoubtedly, a large share in this regard because this subject has primary responsibility in helping to develop a body of devoted, active, well informed and discriminating citizens who participate effectively and ^{of} their free will in the affairs of the locality, the state and the nation. Present syllabus has been drawn with a view to achiev^{ing} the desired goals set by the nation.

The achievement of the desired goals largely depend upon the curriculum that a school follows, the methods and techniques that a teacher adopts in the class room. Many a time it is observed that even the best teacher fails to achieve the desired goals. The question comes to mind why does the teacher fail to achieve the goals? Some may say that it is due to defective planning and organisation of work. Poor or defective planning and organisation may be due to lack or misunderstanding of the syllabus. His work can be made easier and ^{more} effective by providing better teaching aids. Among the teachings aids the textbook is the most important.

In the modern times some educationists are of the opinion that the education should not be textbook centred. But even then the value of the textbook can not be ignored or minimised. It plays an important role in the teaching learning activity. A textbook, on the one hand, helps the teacher in planning the day-to-day work and arranging the necessary teaching material. On the other hand the textbook is a friend to the students. He can use it for individual learning whenever he feels like,

If the textbook is very important in the teaching-learning activity, it should be good and be such that it helps in achieving the goals set. Therefore, the authors or the textbook writer has a great responsibility to discharge. Textbook writing is not limited to the collection of material from different sources. But it involves the collection and presentation of the material to suit the needs of the readers and in achieving the objectives of the teaching of social studies. To achieve the goal the writer should take care of the following points while writing a textbook:

(1) Reflecting the syllabus

Before writing the textbook for a particular grade the writer consults the syllabus. The syllabus gives him the topics and sometimes the objectives of the subject here in our cases, social studies. With a view to translate the syllabus in his textbook he should visualise the assumptions on which the syllabus is drawn. Knowledge of the assumption on which syllabus is drawn will help the writer in selecting the content. In a

subject like social studies it is all the more important because social studies draws its content from many social sciences like history, geography, economics, civics etc. It will not only facilitate his work but also save the writer from going off the track.

(2) Organisation of the material

The writer must make a decision about the organisation of the material within the book and from book to book in the series i.e. the writer must see that ^{the 3} grade /book has a link with the grade 4. The present syllabus suggests the organisation of the material within the book in terms of units. Each unit has a number of lessons, but through all the lessons runs a single theme. This organisation helps the writer to pursue the topic in depth and to emphasise the theme.

The lessons in each unit should be given in some logical manner. This helps to maintain the continuity of ideas. Suppose on a unit "Developmental Programme" the writer gives agriculture in the first instance he can very safely keep here the lesson on irrigation projects. ^{The topic} / may be followed by Industries and so on so forth.

(3) Major Ideas

Another decision the writer has to make is about the major ideas that are to be conveyed through a particular unit. As has already been pointed out that each unit has a specific theme, the writer should translate the theme in terms of major

ideas. This will help him in determining the lessons and their scope. These major ideas will be spelled out in terms of understandings, skills and attitudes.

(4) Understandings

Once the writer has decided the lessons, he has to take a decision as to what understanding, he would like to develop among the young readers. Therefore, the writer should spell out the understandings he should bear in mind, the objectives of the total programme of social studies and the readers interests and abilities. A particular understanding may be very good but beyond the comprehension of the readers. Such understandings has to be left out for other classes. ~~These understandings has to be left out for other classes.~~ These understandings will help, undoubtedly, the writer determining the scope and selecting the content.

(5) Selection of content

After spelling out the understandings, the author goes out to select the necessary content. This content is to be drawn from various social sciences like history, geography, economics civics etc. The writer should be very careful and judicious in selecting the content. In brief it can be said that the content should be in accordance with the objectives set for the lessons.

While selecting the content the writer should also decide what concepts, terms and definitions will be included in different lessons. The writer should also take a decision whether he would explain the concepts, ^{or} terms within the chapter or would explain separately or give in glossary.

Having selected the content in the light of understandings the writer can feel confident in translating the objectives of the syllabus.

(6) Children's Interest

Children between the age group of 5 to 11 love to read if the material is meaningful to them. Therefore, the new ideas, in the textbook, should be expressed through ideas already familiar to them. These ideas should be related to their ^{should} experiences and ~~feed~~ their interests.

(7) Presentation

There are many ways of presenting the content. Story form, dialogue, travelogue and description can be used as styles of presentation. A description loaded with concepts, definitions, terms and difficult words makes the children to feel bored. Therefore, the writer should select the best possible method for the presentation. It is difficult as to what method is the best. The writer has to select keeping in view the content and the interest of the children. The selection of the style should be made with care and judiciously. The writer has to take a lot of care in selecting the style of presentation, for it will make the things meaningful and easier for the children.

(8) Vocabulary

Children love to read all ~~these~~ things which interest them and are meaningful. If the child finds difficulty in reading he feels bored. Therefore, the writer should explain the new concepts in the known vocabulary of the children and through the

experience that they have. The writer should make every possible effort to make the textbook very simple in language and interesting.

(9) Maps and Illustrations

In a book on social studies the writer will use many maps and illustrations. He should mention the maps and illustration on the manuscript. It is important for the writer to decide what maps he would use in the book. The maps should be clear and should be related to the text. The maps should also be involved in the text i.e. the maps should be used as a part of textual material. There should not be left in isolation.

Illustrations can be in the form of pictures, art work, diagrams etc. The writer should decide what type of illustration he would like to use in the text-book. Some illustrations are only of ornamental value while others can help in explaining the concepts. Some illustrations can save the textual material and can help in achieving the objective. Some illustrations may be used for evaluation purposes. Therefore, it is very important for the writer to select the illustrations with reference to content and purpose.

(10) Evaluation

After teaching the teacher would like to know how far the children have acquired the desired knowledge of facts, understanding, skills and attitude. For this purpose the writer has to provide exercises. These exercises can be of many types ~~for~~ ~~example~~ they may be used to recapitulate the chapter or to develop

thinking, reasoning and the application of the knowledge acquired. Therefore, the writer should give various types of exercises in the book. Whether the questions are essay type or objective type they should be based on objectives.

The questions given in the book should be in simple and understandable language so that the children may understand the question rightly.

There should be variety in the questions. Some may be based on memory, some on thinking and some on application.

(11) Review

When the writer has written the manuscript, it should be reviewed by a group of some experienced and knowledgeable persons. In the light of the suggestion the manuscript should be revised and edited.

(12) Try out

When the book is ready it should be used as an experimental edition. The book should be evaluated and in the light of experiences gained the book should be revised.

PRINCIPLES AND CRITERIA FOR PREPARATION OF TEXTBOOKS
IN SCIENCE (CLASS V) - A WORKING PAPER

It is a well known fact that the amount of knowledge has very rapidly grown in all fields during the last fifty years. This is much more so in the field of sciences. Looking to the trend in the growth of knowledge in this area during the last decade it may very well be expected that this rate is still more likely to increase in the coming years.

The curriculum framers have to take note of this and have to see that the curriculum is alive to this rapid growth of the subject. The curriculum has to be so oriented that the pupils would be ready not only to appreciate this growth and participate in it but to use it to increase their comforts and happiness.

The textbook writer has a very important role to play in this regard. He has to interpret the syllabus prepared by the curriculum framers and present it to the young boys and girls so as to give a concrete shape to the ideas envisaged in the curriculum. The treatment of the subject, the illustrations given in the book and the review and other exercises provided should individually and collectively reflect this growth and lead the students to understand and appreciate nature and help them in understanding how the immense wealth of nature is used for the good of mankind. In fact, the whole book should present to the young reader a glimpse of nature and rouse in him a desire to see her and learn more and more about her.

The preparation of text books in Science at this stage may be considered under the following aspects:

- A. Purposes of Learning Science.
- B. Place of Textbooks in Science-Learning.
- C. Preparation of Textbooks.

A. Purposes of Learning Science

The subject of Science has a very important place in the curriculum. Our life is dependend upon many things which are a creation of science and technology. Every educated person must have some minimum knowledge of science to use them effectively and add to them in future. The following are some of the specific purposes of learning science.

- i) To know and understand the behaviour of nature.
- ii) To use this knowledge and understanding to avoid dangers in nature and put nature to the service of man.
- iii) To add to the stock of knowledge already gained by man.

B. Place of Textbooks in Science Learning

The knowledge in science is very vast. The curriculum framers organize it in suitable quantum for each class. The text book writer takes view of the whole subject and presents the specific part for the specific class in such a way as to maintain continuity with the previous class and prepare students for the next class. Much will depend upon the methodology followed by teachers. But the text book gives an outline of the subject matter and also gives some suggestions for methodology.

for the teacher and activities to be taken by pupils. This double role of text books towards the teachers and pupils will guide the textbook writers in their endeavour. This role may be specified in the following terms:

Textbooks:

- i) help in keeping continuity in the treatment of the subject in different classes and stages.
- ii) provide the basic knowledge for a particular class at one place in some well organized manner.
- iii) provide situations for applying the knowledge to effective use along with some suggestions to tackle them.
- iv) develop curiosity and need for further study.

C. Preparation of Textbooks (Class V)

Textbook writing is both an art and a science. The author of the textbook must have good knowledge of the subject, good knowledge of child-mind and teaching methodology. As any other piece of art textbook will have to be properly planned and carefully executed.

The following are the essential steps in preparation of a textbook:

- i) Study of instructional objectives of the subject as laid down by the curriculum:

The study should aim at understanding what specific abilities the students are expected to develop. This

understanding should be kept in mind while developing the method of presentation of textual matter as also the exercises.

- ii) Over view of the courses in some other related subjects such as Mother-tongue, Geography and Mathematics:

This will give the author an idea of the general level of achievement of pupils and guide him in selecting proper experiences and putting them in proper language.

- iii) Over view of the course in Science in classes IV and VI.

This overview will help the textbook writer in linking the presentation to the knowledge already acquired by the student in previous years and preparing him to receive the knowledge in the next year.

- iv) Critical and detailed study of the course in class V in the context of the course in classes IV and VI.

This will give insight into the subject matter of the course and will help the author to divide the whole course into suitable units and each unit into suitable teaching-learning points such as concepts, principles etc. covered under each. The better the understanding of this process the better will be the possibility of developing the subject-matter in the right direction. During this critical study the ideas about the presentation may also occur which may be noted. Later on they will be finalized at the appropriate stage. Ideas about illustrations and exercises will also be gathered and recorded.

Thus this will be a very important step in textbook writing. The greater the amount of thought and time given to it the better it will be.

- v) Organizing the course around related units numbering 10 to 15:

This organization should not be artificial. Only related ideas should be put together into units. Each unit then may give one chapter or a set of chapters.

- vi) Dividing each unit into sub-units if necessary.

Generally in class V one unit should be presented in one chapter. But if it is felt that the chapter will be too unwieldy, the unit may be divided into two or more sub-units each sub-unit leading to a chapter.

- vii) Listing important points to be learnt in each unit, or sub-unit and defining their scope:

This study may give clearer idea about the facts, concepts, principles etc. that are covered under each unit. They may be clearly defined in standard and correct terminology and finalized.

- viii) Listing practical applications of each principle in daily life. Some of them can be used in presentation and some for review exercises.

This is a very fruitful activity. If the author finds new situations and incorporates them in the book, the tone of the book will improve. The students will begin to think and try to solve the problems presented to them through these situations. They should of course be within the experience of pupils.

While selecting these situations the purposes of science learning viz knowing nature and using the knowledge in the service of man should be kept in mind.

ix) Planning

During this planning the number and sequence of chapters and the amount covered under each has to be decided. The place and details of illustrations and diagrams should also be fixed. In planning chapters, the following general principles should be kept in mind:

Content of each chapter:

A chapter should usually be built round a single unit. Some activities may be indicated to lead to the learning of concepts and principles involved. The things to be learnt should be highlighted by presenting them in some special way.

Matter:

The matter to be selected should be relevant, correct and upto date. Different points of view if there are any should be indicated and the superiority of one over the other may be established.

Language:

The language should be simple and within the comprehension of the pupils. In Science subject special care has to be taken to use appropriate words at the right place. The wording and the definitions of concepts or principles should be very accurate and specific. Unnecessary words should never be used.

Each chapter should be complete in itself. But it should also form a part of the whole textbooks.

Illustrations

Suitable and meaningful illustrations and diagrams should be shown at the right place. This will help understanding the subject better. They should be placed so that when the matter is being read the illustrations can be conveniently seen.

Exercises:

Review exercises should be very carefully chosen. They should take note of individual needs. They should rouse curiosity and desire for some further work.

Suggestions for further reading

If there is any material available at the maturity level of the pupils on the topic it may be indicated.

x) Actual Writing

Each chapter may be written out carefully and edited keeping in view all the above mentioned points. Illustrations and Exercises may also be placed in position.

xi) Try out:

Each chapter or at least a few of them may be tried out in actual class situation and then modified if necessary in the light of the experience so gained. The effects of illustrations and diagrams and the functional utility of exercises may also be observed for modification.

xii) Introduction

The introduction of the book may be written last. It may explain the organization of the book and give the specific suggestions to the teacher regarding the use of the textbook

and the methodology likely to be effective. The place of review exercises and their use may also be explained.

xiii) Preparation of other Material

Suitable teacher's guide for the use of teachers and work books for the use of pupils may be prepared. Teachers guides should give specific and detailed suggestions for teaching. Workbooks for pupils should give them suitable activities to work on their own. Which will develop interest and make them think more and more and help them develop ability to solve simple problems.

PREPARATION OF TEXT-BOOKS IN MATHEMATICS FOR PRIMARY CLASSES

I. INTRODUCTION

From times immorial teaching and learning of Mathematics has been considered essential for conducting the daily business of life. Being useful in equipping a child to handle daily affairs involving manipulation of numbers, Arithmetic has received a lot of emphasis. Algebra was considered as generalized Arithmetic. Geometry was useful because it enabled in devising ways and means of measuring space. Development of even higher mathematics was again considered subordinate to its applicability in the solution of complicated problems in the physical world. Thus the utilitarian aim of teaching and learning mathematics ~~became~~ the sole objective to be realized. This led to the sacrifice of the elegant science of mathematics and very few teachers realized that this subject has its own language, structure and methods.

II. LANGUAGE, STRUCTURE AND METHOD OF MATHEMATICS

" You may be accustomed to thinking of a language as English, French, German, Russian, and so forth. To be sure, these make up one sort of language; we may say each of them is a qualitative language, since each is concerned with describing things in terms of qualities. In each of them things are given names and are described as long or short, sweet or sour, present or absent, or are assigned some general qualities.

There are, however, other important languages besides qualitative ones. Some of these other languages are the language of music, in which rhythmic patterns and tones are used to communicate certain thoughts and feelings; the language of graphic arts, in which form and colour provide a basis for communication; and the language of mathematics, which is a language of size and order of quantities and relationships among quantities." *

In addition to having its own language Mathematics has its own structure and method which rightly put it in the category of abstract sciences,. It should be appreciated that being an abstract science it is independent of the physical objects. The numerals 1,2,3,..... or the symbols x, y, z, \dots are abstract notations ~~not~~ unattached to any specific objects. "In order to ~~divest~~ the mathematical objects from whatever physical associations the mind may attach to them through the meaning of words, mathematics calls its abstract entities by a name which has no material suggestion; they are called elements. We try to adopt a completely abstract viewpoint toward the elements, considering them as mere blanks, but at times we must call upon experience from applications in mathematics for illustrations to guide us in thinking or to reveal the meaning of an abstract general statement. In different axiomatic systems,

* Wade, Thomas L. & Taylor, Howard E. Fundamental Mathematics; McGraw-Hill Book Company, New York, 1967, Page 1.

the elements have different names, as 'real numbers' in arithmetic, or 'transformations' in algebra, or 'points' and 'lines' in geometry." *

The chief characteristics of mathematics are 'its abstractness, its precision, its logical rigour, the indisputable character of its conclusions, and the exceptionally ~~the~~ broad range of its applications.' † These together form the structure of Mathematics. Its method is primarily deductive. Starting with certain axioms, some conclusions are drawn which hold good so long as the axioms and the logic used in arriving at the conclusions holds good. It does not mean that with a limited set of axioms mathematics provides answers to all questions. In most of the cases generalizations arrived at through induction are confirmed with the help of deduction, and in such a situation the principle arrived at through this process becomes scientifically acceptable. But sometimes inductive observations illude deductive proofs. They also stay in the sphere of mathematics as unestablished generalizations, more or less like axioms.

II. THE TASK OF A TEACHER OF MATHEMATICS

The task of the teacher of Mathematics is not very easy.

* May Hickey Maria: The Structure of Arithmetic and Algebra. John Wiley and Sons, Inc., New York, 1961, Pp.8-9.

† Aleksandrov, A.D., Kolmogorov, A.N., Lowrentew, M.A.: Mathematics, Its Content, Methods, And Meaning. The M.I.T.Press, Massachusetts, 1963, P.1.

So long as he limits himself to the development^{of} certain manipulative skills in his pupils he is not teaching Mathematics; he may be teaching computation all right. The mechanical way in which Arithmetic is taught in our schools is not at all challenging to the students. It does not motivate them to think and argue on their own. Processes are learnt by rote and faithfully reproduced in solving the problems. This is more or less a lifeless approach and thouroughly against the soul of the subject. That is why Mathematics to most of the students is a drab and lifeless subject. The teacher has to divest Mathematics of this drabness and make his class-room an interesting place rather than a hostile environment in which multiplication tables are to be crammed mechanically without understanding and applied equally mechanically. This would also require a different approach to the writing of text-books in Mathematics. The teacher would also require a well written text-book to assist him in effective teaching.

IV. TEXT-BOOK

Writing text-books in Mathematics for the Elementary classes is a very challenging task. In view of the structure of the subject and the objectives of its teaching the ~~the~~ text-book has to be planned very carefully. From the point of planning the text-book down to the point of its effective utilization in the improvement of the pupil's learning it involves the

following main steps:

- (a) Preparation
- (b) Production
- (c) Distribution
- (d) Use
- (e) Revision

In the following discussion we shall concentrate on the first step viz. Preparation of the text-books. This will be discussed under the following four main headings:

- (1) Background - factors governing the preparation
- (2) Planning
- (3) Presentation
- (4) Editing the manuscript

(1) BACKGROUND FACTORS GOVERNING THE PREPARATION

The first question to be asked in this connection is about the factors that govern the preparation of a text-book.

They are as follows:

- (i) Requirements of the Prescribing Agency
- (ii) Objectives
- (iii) Nature of the subject
- (iv) Characteristics of the Learner
- (v) Psychology of Learning
- (vi) Other Practical Considerations

Some salient points concerning each of the above factors may be as follows:

(1) Requirements of the Prescribing Agency:

In India there is a regular system of inviting and selecting books or getting them written by commissioned authors. In either case the concerned agency lays down specific conditions regarding the bulk of the book in terms of the size of the

page, the number of pages and the type to be used. It also lays down the syllabus and objectives on which the text-book is to be written and often restricts the author's freedom by issuing special instructions regarding the point of view to be reflected. The textbook writer has to conform to these conditions in order that his book may be acceptable to the authorities concerned.

(ii) Objectives

Objectives form another major factor governing the preparation of the text-book. They indicate the mental processes to be developed and the aspects of knowledge to be imparted through the teaching of a particular subject. Of these the former provides the common thread running through the development of the whole content in the textbook as also in the preparation of exercises.

(iii) Nature of the Subject

Whatever the class a good textbook always reflects the nature of the subject. As discussed earlier mathematics is not merely a means for acquiring mechanical manipulative skills. It is much more than that and therefore its true nature as an abstract science with a systematized content and a highly refined and logical method must be reflected even in the textbooks for Primary classes.

(iv) Characteristics of Learner

Text-book, being a means to bring about modifications in the learner's behaviour, has to suit his level of emotional and

physical maturity, interests, academic readiness, and social and family background.

(v) Psychology of Learning

Recent developments in child psychology have amply demonstrated that certain conditions facilitate learning while others block it. Illustrations, paragraphing, captions, sub-captions, repetition of ideas, relating them, referring to earlier relevant material, developing the content sequentially in small units of adequate size, developing the content spirally, language, etc. are all influenced by the principles of learning and motivation which have been developed by psychologists during the last fifty to sixty years. How to make the material interesting and acceptable to the learner is a serious challenge that a text-book writer has to face.

(vi) Other Practical Considerations

Lastly the text-book writer has to bear in mind the practical aspects as well. He has to adjust to the requirements of the situation and may have to sacrifice some of the sound theoretical considerations in order to keep the bulk of the book within the desired limits. In spite of the fact that a handbook for teachers and a workbook for the students are necessary adjuncts of a textbook theoretically, he may have to make the text-book self sufficient in the absence of any possibility of getting these prepared and published along with the text-book.

(2) PLANNING THE TEXT-BOOK

Planning of the text-book is governed by the following factors:

(1) Requirements Of The Prescribing Agency:

These have already been discussed under the background factors governing the preparation of a text-book.

(ii) Developing the Contents:

The contents of the book are dictated by the syllabus. If the syllabus is not detailed enough and if the topics have not been organized into internally coherent, consistent, and related wholes, the first task of the writer is to reorganize the syllabus into units of adequate size to suit the age-level of the learner. The content of each unit may then be further analysed keeping in view the expected knowledge already acquired in the previous class, the proposed quantum for the next class, and the objectives for the present class. A proper articulation has also to be established between different units within the same class. As a result of this analysis the author shall be in a position to decide about the weightage to be given to different units of the subject in the text book. While developing contents it is not necessary for the author to reproduce the syllabus or to stick rigidly to the order of topics as given therein. In a subject like Mathematics the order has necessarily to be logical. The 'Contents' once developed have to be adhered to as far as possible but in exceptional cases

alterations, if considered necessary during the actual writing out of the subject-matter, could definitely be made.

(iii) Illustrations:

Another advance decision to be taken by the author is regarding the number, variety, and size of illustrations to be included in the book. There are no **two** opinions about the fact that illustrations serve a great psychological purpose for the advancement of learning, particularly in lower classes. But, in order to keep the price of the book **low** the author cannot illustrate each and every significant point by means of figures and diagrams howsoever helpful it may prove in clarifying the idea and fixing the learning. He has, therefore, to decide about the number of illustrations in ~~an~~ advance and also about the points which are to be illustrated by means of figures.

(iv) Exercises:

These are included for practice and review. In planning a Mathematics textbook the author has to decide in advance tentatively the number of questions on different teaching points and objectives and also of different forms to be put in the book. He has also to plan out the placement ~~and~~ and organization of these questions. As is known to every author of books in Mathematics, the descriptive content in a Mathematics book is very little as compared to the exercises which in a way form the main bulk of the content and therefore an advance

decision regarding the unit-wise number of questions to be included in the book satisfying all the above-mentioned requirements is a must. Decision regarding the manner of presentation of the key to the exercises has also to be taken in advance.

(v) Other Aspects:

Advance decisions regarding certain other aspects have also to be taken such as whether any instructions are to be given to pupils and teachers about the manner in which the textbook is to be used and whether a glossary, tables and an index are to be given in the book.

PRESENTATION OF THE SUBJECT-MATTER

The presentation of the subject-matter involves the following factors:

(i) Language: The language of the text must be well within the comprehension of the pupils. Considering the level of the children long winding sentences may not be used. Of course, in simplifying the language the accuracy of the content is not to be allowed to suffer. The style must be easy and familiar.

(ii) Selection of Specifics: This forms the hard core of the text-book. The author has to examine carefully each and every fact and exercise before including it in the text-book. He has to try to present the best possible line of argument for communicating an idea as also to select as many varied examples

as possible to bring home clearly the point in hand. The objectives have also to be kept in view while selecting the material for the text-book.

(iii) Gradation, Organization and Articulation: The articles and examples as also the exercises are to be graded carefully. They are to be arranged sequentially in each unit. Proper articulation is to be established between different units as also between different grades, ~~The~~ This requires a thorough command over the subject-matter as a whole and an adequate knowledge of the text-book of the previous class.

(iv) Illustrations: As already discussed earlier the number and variety of illustrations to be included in the text-book may be fixed in advance. While writing the manuscript indication may be given as to the place where a particular illustration is to be used. In Mathematics the illustrations are very closely interwoven with the subject-matter and must be utilized effectively for fixing the learning.

(v) Exercises: Again, something about the exercises has already been discussed with the selection of specifics. Here it may only be pointed out that exercises in Mathematics should be profusely used and presented in a variety of ways at different places in the text-book. They may appear in the form of ~~test~~-papers, review exercises, diagnostic exercises, and practice exercises.

(3) EDITING THE M MANUSCRIPT

It is necessary to do a careful editing of the manuscript to avoid various difficulties that the author and the printer may have to encounter at the time of printing. Contents of the cover-page, preface, contents, glossary, tables, declaration, key, index, etc. should all be adequately arranged along with the subject matter so that the manuscript could be passed on as the press copy of the book. In arranging the subject-matter chapter numbers and titles, captions, sub-captions, numbering of the paragraphs, checking of keys, placement of illustrations, checking of cross-references and references to illustrations, legends, etc. should all be carefully scrutinized and set in order.

Workshop on Textbook Preparation

11th to 14th August, 1969

Venue : M.S. University, Baroda

Morning Session : 10-00 a.m. to 12-30 p.m.

Afternoon Session : 2-00 p.m. to 5-00 p.m.

11-8-69	Morning Session	<ol style="list-style-type: none">1. Welcome2. Introduction3. Purpose and scope of the workshop4. General aspects of preparation and review of textbooks (General discussion)
	Afternoon Session	-do-
12-8-69	Morning Session	Development of the Basic Principles and Criteria for preparation of textbooks and reviewing textbooks in subject fields (subject-wise group work).
	Afternoon Session	Group work continued.
13-8-69	Morning Session	Group work continued.
	Afternoon Session	Group work continued.
14-8-69	Morning Session	<ol style="list-style-type: none">1. Finalisation of the Basic Principles and Criteria for the preparation of textbooks in different subjects.2. Recommendations.
	Afternoon Session	Conclusion.

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